



## **Section 2: High School Courses and Course Descriptions**

Section 2 describes all high school CTE courses.

Courses are listed in alphabetical order. Each description tells you the name of course, course code, grade level, prerequisite, and content focus.

To find approved sequences involving a specific course, see Section 3.

To find details about a certification, license, or assessment available to students who complete specific sequences, see Section 4.

Middle school courses are described in Section 9.

## **Section 2: Courses and Course Descriptions**

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### **Accounting BUS6320**

**Grade Levels:** 10, 11, 12 (36 weeks)

**Prerequisite:** Keyboarding\* is recommended.

Students study the basic principles, concepts, and practices of the accounting cycle. Students learn fundamental accounting procedures using a manual and an electronic system.

\*Keyboarding course(s) or teacher-approved demonstrated and documented touch keyboarding skills

### **Advanced Accounting BUS6321**

**Grade Levels:** 11, 12 (36 weeks)

**Prerequisite:** Accounting

Students gain in-depth knowledge of accounting procedures and techniques used to solve business problems and make financial decisions. Students use accounting and spreadsheet software to analyze and interpret business applications.

### **Advanced Agricultural Mechanization (V) ANR8020**

**Grade Level:** 12 (suggested) (36 weeks)

Much of the instruction may be offered through individualized instruction and independent study. Major learning areas include operation of an agricultural machinery service department; adjustment, maintenance, and repair of planting, spraying, fertilizing, and crop harvesting equipment; diesel engine systems; organization and management of agricultural machinery dealerships; and agricultural sales techniques.

### **Advanced Computer Information Systems BUS6613**

**Grade Levels:** 11, 12 (36 weeks)

### **Advanced Computer Information Systems BUS6615**

**Grade Levels:** 11, 12 (18 weeks)

**Prerequisite:** Computer Information Systems

Students apply problem-solving skills to real-life situations through advanced integrated software applications, including multimedia presentations, printed and electronic desktop publications, and Web site development.

Students work individually and in groups to explore advanced computer maintenance activities, telecommunications, programming, and networking.

### **Advanced Computer Network Software Operations BUS6651**

**Grade Level:** 12 (36 weeks)

**Prerequisite:** Computer Network Software Operations

Advanced Computer Network Software Operations is designed to continue teaching aspects of network administration—focusing on management and support of network users and systems. Time is spent discussing responsibilities of computer professionals, training end users, evaluating new technology, developing system policies, troubleshooting workstations, managing network services and protocols, and effectively using e-mail and business communications. Students learn communications protocols, troubleshooting techniques for systems and client server networks, Web site management, and other advanced networking topics. They learn advanced techniques to install the operating systems, set up and manage accounts, load software, and set up and implement security plans. This course may include software-based network operating systems such as Novell NetWare and Microsoft Windows NT. If industry certification is the basis for this course, school divisions must plan the curriculum in cooperation with the certification provider.

### **Advanced Database Design and Management (Oracle) BUS6661**

**Grade Levels:** 11, 12 (36 weeks)

**Prerequisite:** Database Design and Management (Oracle)

Students study Java programming and Java database applications. The basics of object-oriented programming and the Java programming language are emphasized in this instruction. Students will prepare for industry certification in database applications and programming. Industry certification course competencies will be used for the course.

**Advanced Desktop/Multimedia Presentations BUS6631****Grade Levels:** 11, 12 (36 weeks)**Advanced Desktop/Multimedia Presentations BUS6633****Grade Levels:** 11, 12 (18 weeks)**Prerequisite:** Desktop/Multimedia Presentations

Students develop advanced skill and apply journalistic principles in graphic design of written and electronic publications. Students work with sophisticated hardware and software to develop advanced-level Web sites and multimedia presentations. In addition, HTML, Java Scripting, or other industry-based Web development programming languages may be mastered for use in advanced Web site development.

**Advanced Engineering DTE8491****Grade Level:** 11 or 12 (36 weeks)**Prerequisite:** Introduction to Engineering

To learn the applications and design process of engineering, students form engineering teams and select a group design problem. Each team uses communications, graphics, mathematics, and community resources to solve problems. Each team learns appropriate information in order to complete a project. Projects may be models, systems, or products that creatively solve an engineering problem.

**Advanced Fashion Marketing MKT8145 (co-op)****Advanced Fashion Marketing MKT8146 (oe)****Grade Level:** 12 (36 weeks)**Prerequisite:** Marketing MKT8120/MKT8121 or Fashion Marketing MKT8140/MKT8141

Students with a career interest in apparel and accessories marketing gain in-depth knowledge of the apparel and accessories industry and skills important for supervisory-management employment in apparel businesses. They develop advanced skills unique to fashion marketing and advanced general marketing skills applied to the apparel and accessories industry. Professional selling, sales promotion, buying, merchandising, marketing research, product/service technology, and supervision as well as academic skills (mathematics, science, English, and history/social science) related to the content are part of this course. Computer/technology applications supporting this course are studied.

**Advanced Hotel/Motel Marketing MKT8162 (co-op)****Advanced Hotel/Motel Marketing MKT8163 (oe)****Grade Level:** 12 (36 weeks)**Prerequisite:** Hotel/Motel Marketing MKT8160/MKT8161

Students gain in-depth knowledge of the marketing functions within the hotel-motel industry and the management responsibilities for those functions. They develop advanced skills in the area of hotel-motel operation in which they choose to specialize.

**Advanced International Marketing MKT8136 (oe)****Grade Level:** 12 (suggested) (36 weeks)

**Prerequisite:** Completion of Marketing MKT8120 or MKT8121 or International Marketing MKT8135 (It is recommended that students be enrolled in a foreign language course either concurrently or prior to enrolling in this course.)

Advanced International Marketing, a specialized course for students with a career interest in international trade, builds upon concepts learned in International Marketing (MKT8135). Economic and international trade concepts are reviewed, and the world environment of international trade is further explored. Students expand their knowledge about the impact of culture on international trade and continue their study of the legal and political aspects of international marketing. Global product strategies are examined. Concepts detailing entry into international markets, pricing strategies, international promotion, and marketing research are studied. Computer/technology applications supporting international marketing are explored. A review of skills and preparation required for careers in international marketing complete this course. Internships that provide "hands-on" opportunities in the international area may be available to students. Academic knowledge and skills (mathematics, science, English, and history/social science) related to the content are a part of this course.

**Advanced Manufacturing Systems DTE8427****Grade Level:** 11 or 12 (36 weeks)**Prerequisite:** Manufacturing Systems DTE8425 (36 weeks)

Students develop an in-depth understanding of automation and its applications in manufacturing. Activities center on flexible manufacturing processes and Computer Integrated Manufacturing (CIM). Students work in teams to solve complex interdisciplinary problems that stem from the major systems in automated manufacturing.

**Advanced Marketing MKT8130 (co-op)****Advanced Marketing MKT8131 (oe)****Grade Level:** 12 (36 weeks)**Prerequisite:** Marketing MKT8120/MKT8121

Students continue to gain knowledge of marketing functions and foundations as they relate to supervisory and management responsibilities and develop skills needed for advancement. They develop skills for supervisory positions and/or for continuing education in a marketing-related field. Academic skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting this course are studied.

**Advanced Programming BUS6641****Grade Levels:** 11, 12 (36 weeks)**Prerequisite:** Programming

Students use their knowledge of computer concepts and logic procedures to increase programming skills in one or more programming languages such as Visual Basic, Java, and C++. In addition, HTML, JavaScripting, or other industry-based Web development programming language is mastered for use in advanced Web page development or for use in industry certification programs.

**Advanced Sports, Entertainment, and Recreation Marketing MKT8177 (co-op)****Advanced Sports, Entertainment, and Recreation Marketing MKT8178 (oe)****Grade Level:** 12 (36 weeks)**Prerequisite:** Sports, Entertainment, and Recreation Marketing MKT8175/MKT8176

Students will continue their study of the sports, entertainment, and recreation industry including the impact of Internet marketing and international marketing in this area. Other topics include market research, market segmentation, and sponsorships as well as planning, implementing, and evaluating SER events. Also covered will be working with agents and personal managers and appraising the role of labor unions in SER. Additional study will be focused on developing a career plan in the sports, entertainment, and recreation area. Academic skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting this course are studied.

**Advanced Travel and Tourism Marketing MKT8167 (co-op)****Advanced Travel and Tourism Marketing MKT8168 (oe)****Grade Level:** 12 (36 weeks)**Prerequisite:** Travel and Tourism Marketing MKT8165 or MKT8166

Students gain in-depth knowledge of the marketing functions within the travel-tourism industry and the management responsibilities for those functions. They develop advanced competencies in the areas of communication, human relations, mathematics, creative selling, promotion, industry technology, and marketing research.

**Advanced Turf Grass Applications ANR8054****Grade Level:** 11 or 12**Prerequisite:** Turf Establishment and Maintenance

Students continue to study the duties and tasks of professionals who establish and maintain turf in public areas such as golf courses; parks; athletic fields; school, industrial, and institutional campuses; and residential lawns.

**Advertising Design I TDI8570****Grade Level:** 10 or 11**Advertising Design II TDI8571****Grade Level:** 11 or 12**Prerequisite:** Advertising Design I**Advertising Design III TDI8572****Grade Level:** 12**Prerequisite:** Advertising Design II

Students prepare for job entry at a semi-skilled level as advertising artists, fashion illustrators, and technical illustrators.

**Agricultural Business Fundamentals (III) ANR8022****Grade Level:** 10 or 11 (suggested) (36 weeks)

Students develop the necessary knowledge, skills, habits, and attitudes for employment in off-farm agricultural businesses. Where training centers are available, cooperative arrangements with local agricultural businesses provide occupational experiences for students. When training centers are not available, simulated experiences may be provided. Leadership training is provided through the FFA.

**Agricultural Business Management (V) ANR8026****Grade Level:** 12 (suggested) (36 weeks)

This occupational preparation course should be operated on a cooperative on-the-job training basis with local agricultural businesses. Much of the instruction may be individualized. The course provides further opportunities for the development of business procedures, management techniques, and agricultural product knowledge. Leadership skills continue to be developed.

**Agricultural Business Operations (IV) ANR8024****Grade Level:** 11 or 12 (suggested) (36 weeks)

Wherever possible, students participate in cooperative on-the-job training programs with local agricultural businesses. The curriculum emphasizes off-farm agricultural occupations, business procedures, merchandising, marketing, and agricultural business management. Instruction is provided in agricultural product knowledge, agricultural mechanics, plant science, and leadership development.

**Agricultural Education for the Disabled ANR8050****Agricultural Education for the Disadvantaged ANR8053**

For information, please contact the Agricultural Education Service, Virginia Department of Education.

**Agricultural Education Dual Enrollment with Postsecondary ANR8095**

For information, please contact the Agricultural Education Service, Virginia Department of Education.

**Agricultural Mechanics and Basic Animal Science (Level II) ANR8008****Grade Level:** 9 or 10 (suggested) (36 weeks, single period)

Students continue to learn agricultural mechanics, with emphasis placed on fundamentals of electricity, arc welding, gas cutting and welding, small engines, power woodworking, and wood and metal preservatives. They also receive instruction in animal science and further develop competencies in rural and urban living, leadership, and resource conservation.

**Agricultural Mechanics and Basic Plant Science (Level I) ANR8006****Grade Level:** 8 or 9 (suggested) (36 weeks, single period)

Approximately one-half of this course is devoted to agricultural mechanics, with emphasis placed on skill development in basic metals, tool fitting and cold metals, basic arc welding, sheet metal, soldering and brazing, plan reading and sketching, and hand woodworking. The remainder of the course emphasizes the development of competencies in plant sciences, rural and urban living, leadership, and resource conservation.

<p><b>Agricultural Mechanization Sales and Service (IV) ANR8018</b>  <b>Grade Level:</b> 11 or 12 (suggested) (36 weeks)  Students enrolled in this course learn operating procedures in a parts department, focusing on newly developed agricultural machines, engine analysis and troubleshooting, basic hydraulics, mechanical power transfer systems, the implement industry, metal fusion and fabrication welding, and adjustment and repair of tillage equipment</p>
<p><b>Agricultural Power and Equipment (III) ANR8016</b>  <b>Grade Level:</b> 10 or 11 (suggested) (36 weeks)  Students prepare for entry-level employment and advancement in the agricultural equipment industry or for the operation and maintenance of farm equipment. Students learn to use selected hand tools, precision measuring tools, and testing equipment in the maintenance of small engines. Completion of this course may prepare students for Outdoor Power Equipment Certification.</p>
<p><b>Agricultural Production Management (IV) ANR8012</b>  <b>Grade Level:</b> 11 or 12 (suggested) (36 weeks)  Course includes instruction in agricultural mechanics, with emphasis placed on the application of mechanical skills to farm power and machinery, soil and water management, supervised farming programs, and leadership training.</p>
<p><b>Agricultural Production Technology (III) ANR8010</b>  <b>Grade Level:</b> 10 or 11 (suggested) (36 weeks)  This course emphasizes one or more areas of plant science, animal science, soil science, agricultural business management, and agricultural mechanization, based upon the student's employment objective. Supervised occupational experience programs and leadership training are important parts of the course. When only single periods are provided, greater emphasis is placed on individualized instruction and supervised occupational experience programs.</p>
<p><b>Aircraft Pilot Training I TDI8731</b>  <b>Grade Level:</b> 11  <b>Aircraft Pilot Training II TDI8732</b>  <b>Grade Level:</b> 12  <b>Prerequisite:</b> Aircraft Pilot Training I  Students participate in flight training, ground school, and simulator instruction to support the flight syllabus while studying meteorology, aerodynamics, navigation, physiology, airfield and flight environments, aircraft maneuvers, and aircraft weight and balance.</p>
<p><b>Applied Agricultural Concepts ANR8072</b>  <b>Grade Level:</b> 9-12 (18 weeks)  <b>Applied Agricultural Concepts ANR8073</b>  <b>Grade Level:</b> 9-12 (36 weeks)  Students who have limited or no agricultural background or experience learn fundamental agricultural competencies needed for rural or urban living. Areas of instruction include meat grading and selection; maintenance of home appliances and equipment; and the study of plumbing, electrical wiring, and carpentry fundamentals. Teachers may incorporate additional competencies in the study of soil fertility and in cultural practices for shrubs, lawns, gardens, and fruit trees. The course emphasizes leadership development activities and participation in FFA activities.</p>
<p><b>Architectural Drawing/Design DTE8437</b>  <b>Grade Level:</b> 10, 11, or 12 (36 weeks)  <b>Architectural Drawing/Design DTE8492</b>  <b>Grade Level:</b> 10, 11, or 12 (18 weeks)  <b>Prerequisites:</b> Technical Drawing/Design  Students learn the principles of architecture and increase understanding of working drawings and construction techniques learned in the prerequisite course. Experiences include residential and commercial building designs, rendering, model making, structural details, and community planning. Students use computer-aided drawing and design (CAD) equipment and established standards or codes to prepare models for presentation. The course provides information helpful for the homeowner and is especially beneficial to the future architect, interior designer, or home builder.</p>

**Automotive Body Repair I—Non-Certified TDI8679****Grade Level:** 10 or 11**Automotive Body Repair II—Non-Certified TDI8680****Grade Level:** 11 or 12**Prerequisite:** Auto Body Repair I**Automotive Body Repair III—Non-Certified TDI8681****Grade Level:** 12**Prerequisite:** Auto Body Repair II

Auto Body Repair—Non-Certified is a one-year class offered to juniors or seniors. Students learn to mask, spray, and air brush automobiles. In addition, they learn to apply undercoating and practice maintenance and safety procedures.

**Automotive Body Technology I—Certified TDI8676****Grade Level:** 10 or 11**Automotive Body Technology II—Certified TDI8677****Grade Level:** 11 or 12**Prerequisite:** Auto Body Technology I—Certified**Automotive Body Technology III—Certified TDI8678****Grade Level:** 12**Prerequisite:** Auto Body Technology II—Certified

Students learn to repair the body and fenders of automobiles. Instruction in body preparation for painting and finishing is included.

**Automotive Maintenance TDI8709****Grade Level:** 10 or 11 (1 year)

Students enrolled in this 540-hour course learn fundamental skills associated with engine tune-up, electrical diagnosis and repair, lubrication and cooling system diagnosis and repair, brake system diagnosis and repair, basic fuel system diagnosis and repair, basic suspension system diagnosis and repair, and basic routine maintenance of automobiles.

**Automotive Service Technology I—Certified TDI8506****Grade Level:** 10 or 11**Automotive Service Technology II—Certified TDI8507****Grade Level:** 11 or 12**Prerequisite:** Auto Service Technology I—Certified**Automotive Service Technology III—Certified TDI8508****Grade Level:** 12**Prerequisite:** Auto Service Technology II—Certified

Students learn to repair fuel, electrical, cooling, brake, drive train, and suspension systems. Instruction is given also in the adjustment and repair of individual components and systems such as radiators, transmission, and carburetors. Programs are certified by ASE, allowing students to prepare for the following certification, depending on local program content: Automotive Technician, Engine Machinist, Medium and Heavy Truck Technician, School bus Technician, and Parts Specialist—Automotive or Medium/Heavy Truck.

**Automotive Servicing I—Non-Certified TDI8710****Grade Level:** 10 or 11**Automotive Servicing II—Non-Certified TDI8711****Grade Level:** 11 or 12**Prerequisite:** Auto Servicing I**Automotive Servicing III—Non-Certified TDI8712****Grade Level:** 12**Prerequisite:** Auto Servicing II

Students learn to make minor repairs, tune engines, and practice routine maintenance procedures. The study of electrical systems and components of the cooling system is included.

**Aviation Maintenance Technology I TDI8728****Grade Level:** 11**Aviation Maintenance Technology II TDI8729****Grade Level:** 12**Prerequisite:** AMT I

Students study aircraft systems and components, technical diagrams and charts, aerodynamics, basic electricity, and electronics as specified by FAA requirements.

**Basic Automotive Body Repair TDI8675****Grade Level:** 10 or 11 (1 year)

Students enrolled in this 540-hour program learn fundamental skills associated with repairing the body and fenders of automobiles, with emphasis on safe use of hand and power tools and use of spray guns to refinish the modern automobile.

**Basic Carpentry TDI8600****Grade Level:** 10 or 11 (one year)

Students enrolled in this 540-hour program learn fundamental skills associated with layout, framing, and construction materials and install wooden products.

**Basic Photography TDI8610****Grade Level:** 10 or 11 (one year)

Students enrolled in this 540-hour program will learn photographic skills such as using multiple camera formats to set up, shoot, process and present photographic images; creating images using digital technology and preparing a professional portfolio to prepare for a career in the field of photography.

**Basic Small Engine Repair TDI8724****Grade Level:** 10 or 11 (1 year)

Students enrolled in this 540-hour program learn skills associated with general maintenance and repair of lawnmowers, rotary tillers and portable power equipment.

**Bioengineering****Grade Level:** 11 or 12**Prerequisite:** Biotechnology Foundations

The study of bioengineering combines engineering, medicine and other biological sciences. Students explore the process of designing and producing a variety of bio-based products. Student research and problem-based activities include a) designing artificial limbs and other organ substitutes, and b) producing and testing electronic instruments and advanced equipment used in biotechnology.

**Biological Applications in Agriculture ANR8086****Grade Levels:** 9-12 (36 weeks)

This course is designed to integrate science and agriculture in the Agricultural Education classroom. Students explore the world of agriculture and the biological principles associated with it. Competencies emphasize and reinforce standards of learning for biology with agricultural applications. Localities may substitute certain course competencies to facilitate the use of laboratory facilities. Approval can be requested from the Virginia Department of Education for science credit.



**Biotechnology Applications in Agriculture ANR8087****Grade Level:** 11 or 12**Prerequisite: Biotechnology Foundations DTE9820**

This course will enable students to understand the uses of biotechnology in the fields of plant and animal agriculture, the environment, and food science. Students will develop occupational skills in agricultural biotechnology. Students will have opportunities to apply the skills and concepts needed for careers in biotechnology. The course will provide students with the knowledge to make balanced judgments regarding the benefits and concerns posed by agricultural biotechnology. The students will be involved in many research and application activities.

**Biotechnology Foundations DTE9820****Grade Level:** 10, 11, or 12

This course focuses on various techniques that are used to modify living organisms, or parts of organisms, to improve plants and animals, and the development of microorganisms for specific purposes. Student activities range from bioprocessing and genetic engineering to medicine, biomechanical systems, and the environment. Students gain insight and understanding about biotechnology career fields.

**Brick Layer TDI8511****Grade Level:** 10 or 11 (1 year)

Students enrolled in this 540-hour program learn the fundamental skills associated with laying block and brick.

**Building Trades I TDI8515****Grade Level:** 10 or 11**Building Trades II TDI8516****Grade Level:** 11 or 12**Prerequisite:** Building Trades I**Building Trades III TDI8517****Grade Level:** 12**Prerequisite:** Building Trades II

This group of instructional programs prepares students to erect, install, maintain, and repair buildings, and other structures using materials such as metal, wood, stone, brick, glass, concrete and composition substances. Students develop skills in estimating costs; cutting, fastening, and fitting various materials; using hand and power tools; and following technical specifications and blueprints.

**Business and Information Technology Dual Enrollment BUS6810**

For information, please contact the Business and Information Technology Program Service, Virginia Department of Education.

**Business Law BUS6131****Grade Levels:** 10, 11, 12 (36 weeks)**Business Law BUS6132****Grade Levels:** 10, 11, 12 (18 weeks)

Students examine the foundations of the American legal system. Students explore economic and social concepts as they relate to legal principles and to business and personal laws.

**Business Management BUS6135****Grade Levels:** 10, 11, 12 (36 weeks)**Business Management BUS6136****Grade Levels:** 10, 11, 12 (18 weeks)

Students study basic management concepts and leadership styles as they explore business ownership, planning, economics, international business, and human relations issues such as employee motivation and conflict resolution. Student leadership skills may be enhanced by internship experiences.

**Cabinetmaking I TDI8604****Grade Level:** 10 or 11**Cabinetmaking II TDI8605****Grade Level:** 11 or 12**Prerequisite:** Cabinetmaking I**Cabinetmaking III TDI8606****Grade Level:** 12**Prerequisite:** Cabinetmaking II

Students learn to engage in the mass production of window frames, molding, trim, panels, store fixtures, kitchen cabinets, office equipment, and other products. They practice cutting, shaping, assembling, and refinishing articles; installing hinges, catches, drawer pulls, and other hardware; and planning and drafting layouts.

**Career Pathways (Career Exploration) Phase 1 CCN9070****Grade Levels:** 6-12 (Time and schedule locally determined)

Phase 1 prepares students to be "career investigators." To obtain the title, students must assess their role in society, identify their role as a worker, analyze their personal assets, complete a basic exploration of career clusters and select career fields or occupations for further study, and secure a career investigator (job shadowing) position with a local employer.

**Career Pathways (Career Skills) Phase 2 CCN9071****Grade Levels:** 6-12 (Time and schedule locally determined)

Phase 2 consists of an in-depth study of one to four or more career clusters through a variety of investigative activities with local employers. Students observe, analyze, and report on the demand for workers, worker qualifications, organizational structures, quality control measures, selected policies and regulations, ethical issues, and rewards of work. Students who complete Phase 2 successfully qualify to become "career analysts."

**Career Pathways (Career Match) Phase 3 CCN9072****Grade Levels:** 11-12 (Time and schedule locally determined)

In Phase 3, students match their interests and aptitudes with occupational information, investigate a variety of pathways to career success, and reinforce the skills and knowledge needed for paid employment, particularly in the challenging 21st-century workplace. Pathways may include paid or volunteer employment experiences while the student is still in high school; continuing education opportunities such as college degree programs, apprenticeships, two-year specialized Tech Prep programs, or military experience; or any combination that will enhance progress toward a career goal.

**Carpentry I TDI8601****Grade Level:** 10 or 11**Carpentry II TDI8602****Grade Level:** 11 or 12**Prerequisite:** Carpentry**Carpentry III TDI8603****Grade Level:** 12**Prerequisite:** Carpentry II

In this program students lay out, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Instruction in common systems of framing, construction materials, estimating, and blueprint reading is included.

**Commercial Photography I TDI8607****Grade Level:** 10 or 11**Commercial Photography II TDI8608****Grade Level:** 11 or 12**Prerequisite:** Commercial Photography I**Commercial Photography III TDI8609****Grade Level:** 12**Prerequisite:** Commercial Photography II

Students learn to operate air brushes, cameras, meters, and other photographic equipment. Instructional topics include composition and color dynamics, contact printing, enlarging and developing film, and processing microfilm.

**Commercial Sewing I TDI8524****Grade Level:** 10 or 11**Commercial Sewing II TDI8525****Grade Level:** 11 or 12**Prerequisite:** Commercial Sewing I**Commercial Sewing III TDI8526****Grade Level:** 12**Prerequisite:** Commercial Sewing II

Students become proficient in the operation of various types of sewing machines. Instruction includes design, construction, alteration, and fitting of wearing apparel.

**Communication Systems DTE8415****Grade Level:** 9, 10, 11, or 12 (36 weeks)**Communication Systems DTE8418****Grade Level:** 9, 10, 11, or 12 (18 weeks)

This course provides experiences related to various modes of communicating information, using data, technical design, optics, graphic production, audio and video, and integrated systems. Students solve problems involving input, process, output, and feedback processes. Also, students learn about potential career choices related to communication and impact of communication on society.

**Computer Applications BUS6611****Grade Levels:** 7, 8, 9, 10 (36 weeks)**Computer Applications BUS6617****Grade Levels:** 7, 8, 9, 10 (18 weeks)**Prerequisite:** Keyboarding\* is recommended.

Students develop or review correct keyboarding techniques and gain a basic knowledge of word processing, spreadsheet, database, graphics, and telecommunications applications. Students demonstrate an understanding of computer concepts through application of knowledge. Students learn to use software packages and local and worldwide network communications systems. Grade 8 Computer/Technology Standards of Learning are incorporated and reinforced in this course.

\*Keyboarding course(s) or teacher-approved demonstrated and documented touch keyboarding skills

**Computer Control and Automation DTE8421** (formerly Computing Systems)**Grade Level:** 9, 10, or 11 (36 weeks)**Computer Control and Automation DTE8420** (formerly Computing Systems)**Grade Level:** 9, 10, or 11 (18 weeks)

Students engage in a broad study of the technical aspects of computers and their applications to production, transportation, and communication systems. Topics include computer equipment and operating systems, programming, control processing information, and social/cultural impact of computers. Problem-solving activities challenge students to plan, program, and interface devices with computer systems. Learning activities include experiences with robotics and control systems, computer-aided design, and computer-aided manufacturing.

**Computer Information Systems BUS6612****Grade Levels:** 10, 11, 12 (36 weeks)**Computer Information Systems BUS6614****Grade Levels:** 10, 11, 12 (18 weeks)**Prerequisite:** Keyboarding,\*

Students apply problem-solving skills to real-life situations through word processing, spreadsheet, database, and multimedia presentation software, and through integrated software activities. Students work individually and in groups to explore computer concepts, operating systems, networks and telecommunications, and emerging technologies.

\*Keyboarding course(s) or teacher-approved demonstrated and documented touch keyboarding skills

**Computer Networking Hardware Operations I TDI8542****Grade Level:** 11**Computer Networking Hardware Operations II TDI8543****Grade Level:** 11**Prerequisite:** Computer Networking Hardware Operations I**Computer Networking Hardware Operations III TDI8544****Grade Level:** 12**Prerequisite:** Computer Networking Hardware Operations II**Computer Networking Hardware Operations IV TDI8545****Grade Level:** 12**Prerequisite:** Computer Networking Hardware Operations III

Students learn networking principles and the building and maintenance of computer networks in a Web-based, hands-on curriculum.

**Computer Network Software Operations BUS6650****Grade Levels:** 11, 12 (36 weeks)**Prerequisites:** Keyboarding\* and Information Technology Fundamentals are recommended.

Computer Network Software Operations is designed to teach many aspects of computer support and network administration. Students learn networking concepts, from usage to components, and set up peer-to-peer network systems and client server networks. Students install and configure network cards and connect them to networks. Students learn how to install the operating systems, set up and manage accounts, load software, and set up and implement security plans. This course may include software-based network operating systems such as Novell NetWare and Microsoft Windows NT. If industry certification is the basis for this course, school divisions must plan the curriculum in cooperation with the certification provider.

**Computer Repair and Servicing (Computer Maintenance) TDI8621****Grade Level:** 10 or 11 (1 year)

Students enrolled in this 540-hour course learn fundamental skills associated with maintenance of computers.

**Computer Solutions BUS6609****Grade Levels:** 7, 8 (6/9/12/18 weeks)**Computer Solutions BUS6609****Grade Levels:** 7, 8 (36 weeks)

Students use the computer as a problem-solving tool to complete a variety of projects. Students participate in team-building activities that include both academic and business competencies. Basic touch keyboarding instruction is provided early in the course.

**Computer Systems Technology I TDI8622****Grade Level:** 10 or 11**Computer Systems Technology II TDI8623****Grade Level:** 11 or 12**Prerequisite:** Computer Systems Technology I**Computer Systems Technology III TDI8624****Grade Level:** 12**Prerequisite:** Computer Systems Technology II

Students learn to construct, troubleshoot, service, and repair computer systems, related components, and software, and install and maintain local area networks.

**Construction Technology DTE8431****Grade Level:** 10, 11, or 12 (36 weeks)**Construction Technology DTE8432****Grade Level:** 10, 11, or 12 (18 weeks)

In this single-period laboratory course, students design, build, and test scale-model structures and work with projects that help them to understand the jobs of architects, carpenters, electricians, plumbers, surveyors, contractors, masons, design engineers, and a variety of other construction careers. (This course is a companion to Manufacturing Systems.)

**Cosmetology I TDI8527****Grade Level:** 10 or 11**Cosmetology II TDI8528****Grade Level:** 11 or 12**Prerequisite:** Cosmetology I**Cosmetology III TDI8529****Grade Level:** 12**Prerequisite:** Cosmetology II

Cosmetology is the study of hair, skin, and nails and their related care. Students study and prepare in a clinical lab setting, using mannequins and live models for manipulative skill practice. The program emphasizes safety and sanitation, communication, and management skills. Related areas of study include psychology, ethics, and presentation of a professional image. Competency completions prepare the student for the Virginia Board of Cosmetology licensing exam.

**Criminal Justice I TDI8702****Grade Level:** 10 or 11**Criminal Justice II TDI8703****Grade Level:** 11 or 12**Prerequisite:** Criminal Justice I**Criminal Justice III TDI8704****Grade Level:** 12**Prerequisite:** Criminal Justice II

Students learn the theory, principles, and techniques of developing, administering, and managing services for the safety and protection of people and property.

**Culinary Arts I TDI8521****Grade Level:** 10 or 11**Culinary Arts II TDI8522****Grade Level:** 11 or 12**Prerequisite:** Culinary Arts I**Culinary Arts III TDI8523****Grade Level:** 12**Prerequisite:** Culinary Arts II

Students are prepared for job entry at the semi-skilled level for food service occupations. Instructional areas include nutrition, handling and storing of food, sanitation, and the microbiology of food spoilage.

**Culinary Arts I FCS8275 (formerly Food Occupations I)**

**Grade Level:** 11 (36 weeks, 2 or 3 periods per day or equivalent time per week)

**Prerequisite:** Introduction to Culinary Arts is recommended.

Students prepare for managerial, production, and service skills used in government, commercial, or independently owned institutional food establishments and related food industry occupations. Their study includes planning, selecting, storing, purchasing, preparing, and serving food and food products; basic nutrition, sanitation, and food safety; the use and care of commercial equipment; serving techniques; and the operation of institutional food establishments. Critical thinking, practical problem solving, and entrepreneurship opportunities within the field of culinary arts are emphasized. Teachers highlight the basic skills of math, science, and communication when appropriate in content.

**Culinary Arts II FCS8276 (formerly Food Occupations II)**

**Grade Level:** 12 (36 weeks, 2 or 3 periods per day or equivalent time per week)

**Prerequisite:** Culinary Arts I is recommended.

Students extend and expand skills learned in Culinary Arts I, preparing for occupations such as chef/cook, baker/pastry helper, pastry decorator, hospitality worker, dietetic aide/assistant, food demonstrator, mixologist, and entrepreneur. Cooperative (on-the-job) education or an internship under the supervision of the instructor is an option. Critical thinking, practical problem solving, and entrepreneurship opportunities within the field of culinary arts are emphasized. Teachers highlight the basic skills of math, science, and communication when appropriate in content.

**Custodial Services I TDI8590**

**Grade Level:** 10 or 11

**Custodial Services II TDI8591**

**Grade Level:** 11 or 12

**Prerequisite:** Custodial Services I

**Custodial Services III TDI8592**

**Grade Level:** 12

**Prerequisite:** Custodial Services II

Students learn to service a variety of structures including commercial and industrial buildings and mobile homes by practicing basic cleaning, maintenance, and repair skills related to the air conditioning, heating, plumbing, and electrical systems.

**Database Design and Management (Oracle) BUS6660**

**Grade Levels:** 10-11 (36 weeks)

**Prerequisite:** Information Technology Fundamentals is recommended.

This first-year course includes database design and programming. Students study database fundamentals to include database development, modeling, design, and normalization. In addition, students are introduced to database programming. Students gain the skills and knowledge needed to use features of database software and programming to manage and control access to data. Industry certification competencies will be used for the course.

**Dental Assistant I HMS8328**

**Grade Level:** 11 (suggested) (36 weeks, double period)

**Prerequisites:** Keyboarding and Introduction to Health Occupations are strongly recommended.

Students are introduced to the careers in dentistry, including dentist (general and specialists), hygienist, dental assistant, dental laboratory technician, and dental receptionist. Students practice and learn about many of the skills utilized in these professions while attaining all the skills necessary to become a dental assistant. Study includes infection control and OSHA standards, anatomy and physiology, tooth morphology, oral histology, preventive dentistry, applied psychology, effective communication, office administration and management, use of dental software, operative dentistry techniques, and dental materials/laboratory skills.

**Dental Assistant II HMS8329**

**Grade Level:** 12 (suggested) (36 weeks, double period)

**Prerequisite:** Dental Assistant I

Units of study include medical emergencies, coronal polishing, oral pathology, dental roentgenology, nutrition, schedule IV drugs and pharmacology, and advanced laboratory techniques. While attending classes for part of the week, students also have an opportunity to participate in internships in local private dental offices and public health dental facilities where they participate in all phases of dental care delivery. At the completion of the program, the student is State Dental Board certified in Radiation Hygiene and Safety and in Schedule IV Drugs and is qualified to work as a dental assistant, dental receptionist, patient educator, appointment controller, and dental office manager. After two years in the field, graduates of the program are eligible to take the national examination to become a certified Dental Assistant. Many graduates choose to continue their dental education at community colleges and universities.

**Desktop/Multimedia Presentations BUS6630**

**Grade Levels:** 11, 12 (36 weeks)

**Desktop/Multimedia Presentations BUS6632**

**Grade Levels:** 11, 12 (18 weeks)

**Prerequisites:** Keyboarding\*

Students develop proficiency in using desktop publishing software to create a variety of printed and electronic publications. Students will incorporate journalistic principles in design and layout of publications. Students work with sophisticated hardware and software to develop Web sites and multimedia presentations.

\*Keyboarding course(s) or teacher-approved demonstrated and documented touch keyboarding skills

**Diesel Equipment Technology I TDI8613**

**Grade Level:** 10 or 11

**Diesel Equipment Technology II TDI8614**

**Grade Level:** 11 or 12

**Prerequisite:** DET I

**Diesel Equipment Technology III TDI8615**

**Grade Level:** 12

**Prerequisite:** DET II

Students receive instruction in general maintenance and overhaul of diesel equipment. They learn to inspect, maintain, and repair tracks, wheels, brakes, operating controls, pneumatic and hydraulic systems, electrical circuitry, and engines. They practice welding and brazing techniques.

**Digital Input Technologies BUS 6160**

**Grade Levels:** 7, 8, or 9 (18 weeks)

**Prerequisite:** Keyboarding\* is recommended.

**Digital Input Technologies BUS6161**

**Grade Levels:** 7, 8, or 9 (36 weeks)

**Prerequisite:** None

The Digital Input Technologies course introduces new and emerging tools that are quickly becoming standard in today's workplace. Students develop proficiency using Personal Data Assistants (PDAs), speech recognition software, and input tools for entering and manipulating text and data. The 36-week course offers secondary-level keyboarding skills.

\*Keyboarding course(s) or teacher-approved demonstrated and documented touch keyboarding skills

**Drafting I TDI8530****Grade Level:** 10 or 11**Drafting II TDI8531****Grade Level:** 11 or 12**Prerequisite:** Drafting I**Drafting III TDI8532****Grade Level:** 12**Prerequisite:** Drafting II

Students learn theory and the manipulative skills necessary to produce complete and accurate drawings based on the ideas and sketches of engineers, architects, and designers. They design and prepare mechanical, structural, and architectural plans, electronics, transmitters, power supplies, and receivers relevant to consumer electronic products as they practice electronic product troubleshooting, servicing, and safety procedures.

**Early Childhood Education I FCS8285****Grade Level:** 11 (36 weeks, 2 or 3 periods per day or equivalent time per week)**Prerequisite:** Introduction to Early Childhood Education is recommended.

Students prepare to be primary providers of home-, family-, or institution-based child care services by focusing their study on the planning, organizing, and conducting of meaningful play and learning activities; child monitoring and supervision; record keeping; and referral procedures. Critical thinking, practical problem solving, and entrepreneurship opportunities within the field of early childhood education are emphasized. Teachers highlight the basic skills of math, science, and communication when appropriate in content.

**Early Childhood Education II FCS8286****Grade Level:** 12 (36 weeks, 2 or 3 periods per day or equivalent time per week)**Prerequisite:** Early Childhood Education I

Students prepare for positions in child care centers as child care attendants, kindergarten aides, or child care assistants; as foster parents; or as entrepreneurs. Cooperative (on-the-job) education or an internship under the supervision of the instructor is an option. Critical thinking, practical problem solving, and entrepreneurship opportunities within the field of early childhood education are emphasized. Teachers highlight the basic skills of math, science, and communication when appropriate in the content.

**Ecology and Environmental Management ANR8045****Grade Levels:** 9-12 (18 weeks)**Ecology and Environmental Management ANR8046****Grade Levels:** 9-12 (36 weeks)

Students develop conservation competencies and skills through the understanding of environmental concerns. Instructional content includes the care, management, and preservation of soil, air, water, and wildlife. Students identify and discuss prevalent environmental problems and learn methods and practices used to preserve natural resources and maintain a healthy ecology. Teachers incorporate specific environmental concerns and issues common to the local school community. The course emphasizes leadership activities and opportunities to participate in FFA functions.

**Education for Employment (EFE)****Introduction CCN9075** (for Students Identified as Disadvantaged—18 weeks)**Introduction CCN9076** (for Students Identified as Disadvantaged—other than 18 weeks)**Introduction CCN9082** (for Students with Disabilities—18 weeks)**Introduction CCN9083** (for Students with Disabilities—other than 18 weeks)**Grade Level:** 6, 7, 8, 9

Students explore independent living and workplace skills by identifying individual assets, interests, aptitudes, talents, and current occupational abilities. Through practical experiences related to daily living and work, students determine strategies to improve their assets and ways to emphasize their strengths at home, school, and in the workplace.



<p><b>Education for Employment (EFE)</b>  <b>Level I CCN9077</b> (for Students Identified as Disadvantaged—18 weeks)  <b>Level I CCN9078</b> (for Students Identified as Disadvantaged—other than 18 weeks)  <b>Level I CCN9084</b> (for Students with Disabilities—18 weeks)  <b>Level I CCN9085</b> (for Students with Disabilities—other than 18 weeks)  <b>Grade Levels:</b> 9, 10, 11  Students investigate various occupational fields, examine occupational requirements, and select a career pathway. They begin to focus on improving and gaining skills required for specific occupations. They practice solving real-world problems in the home, in school, and in the workplace. Level I or II includes 36-week Cooperative Education option.</p>
<p><b>Education for Employment (EFE)</b>  <b>Level II CCN9079</b> (for Students Identified as Disadvantaged—18 weeks)  <b>Level II CCN9080</b> (for Students Identified as Disadvantaged—other than 18 weeks)  <b>Level II CCN9086</b> (for Students with Disabilities—18 weeks)  <b>Level II CCN9087</b> (for Students with Disabilities—other than 18 weeks)  <b>Grade Levels:</b> 10, 11, 12  Students begin to make the transition from school to work by gaining technical skills, conducting a job search, and maintaining successful employment by demonstrating positive work traits and attitudes and continuing to develop technical skills. They focus on balancing their roles of worker, family member, and citizen. Level I or II includes 36-week Cooperative Education option.</p>
<p><b>EFE Cooperative Education I CCN9020</b> (for Students Identified as Disadvantaged)  <b>EFE Cooperative Education I CCN9030</b> (for Students with Disabilities)  <b>EFE Cooperative Education II CCN9021</b> (for Students Identified as Disadvantaged)  <b>EFE Cooperative Education II CCN9031</b> (for Students with Disabilities)  <b>Recommended Grade Levels:</b> 11, 12  This option replaces WECEP (Work Experience Cooperative Education Program)  Students receive school-based and community-based instruction organized around an approved job that leads toward their career goal. The teacher-coordinator, on-the-job training sponsor, parent, and student develop an individualized training plan that identifies learning experiences according to the student's occupational objective. The on-the-job paid training is an extension of the classroom instruction coordinated by the classroom teacher into a coherent set of performance objectives and skills.</p>
<p><b>Electricity and Cabling I TDI8533</b>  <b>Grade Level:</b> 10 or 11  <b>Electricity and Cabling II TDI8534</b>  <b>Grade Level:</b> 11 or 12  <b>Prerequisite:</b> Electricity and Cabling I  <b>Electricity and Cabling III TDI8535</b>  <b>Grade Level:</b> 12  <b>Prerequisite:</b> Electricity and Cabling II  Students develop skills in the installation, operation, maintenance, and repair of residential, commercial, and industrial electrical systems. They also study dc and ac motors, controls, and electrical-distribution panels.</p>
<p><b>Electronics Systems I DTE8416 (36 weeks)</b>  <b>Electronics Systems I DTE8417 (18 weeks)</b>  <b>Grade Level:</b> 9, 10, 11, or 12  This course engages students in electricity and electronic experiments that focus on the application of scientific theories and mathematics principles. Students solve problems using simple electrical devices and circuits and build electronic projects using dc and ac devices and circuits.</p>
<p><b>Electronics Systems II 8412 (36 weeks)</b>  <b>Grade Level:</b> 10, 11, or 12  <b>Prerequisite:</b> Electronics Systems I  Students work with electronics devices, instruments, and circuits, building projects to apply theories and laws with electronic components such as resistors, capacitors, and transistors. They also study integrated circuits used in computers, amplifiers, television, and other equipment.</p>

**Electronics Technology I TDI8536****Grade Level:** 10 or 11**Electronics Technology II TDI8537****Grade Level:** 11 or 12**Prerequisite:** Electronics Technology I**Electronics Technology III TDI8538****Grade Level:** 12**Prerequisite:** Electronics Technology II

Students learn to assemble, install, operate, maintain, repair, and troubleshoot electrical/electronic equipment used in industry and manufacturing. Digital and computer circuitry, synchro- and servo-mechanisms, mechanical power transfer systems, three-phase alternate current and electronic wave shaping are included in this program.

**Emergency Medical Technician-B I HMS8333****Grade Level:** 11 (36 weeks, double period)

Students focus on the role and responsibilities of emergency rescue workers, basic medical terminology, and health care skills that include first aid; cardiopulmonary resuscitation; aseptic technique; and related anatomy, physiology, and disease knowledge. Supervised work education is provided in a hospital or with rescue squads and managed by the HOE teacher.

**Emergency Medical Technician-B II HMS8334****Grade Level:** 12 (36 weeks, double period)

Students become skilled in identifying and dealing with emergencies such as bleeding, fractures, airway obstruction, and cardiac arrest. Instruction emphasizes proper care and use of common emergency equipment and safe methods for lifting, moving, and transporting injured persons. Supervised on-the-job training and patient-care experiences are part of the instructional program. Program completers may take the EMT state certification examination administered by the Virginia Department of Health.

**Emergency Medical Technician-B III HMS8335****Grade Level:** 12

This course will allow the student to strengthen the skills acquired in the basic course and build on their certification level with additional certifications and mentored experience. Students will serve as liaisons with other public safety services (fire, law enforcement, emergency management). Units of instruction include the following:

- Review of EMT-Basic skills (medical, trauma, environmental)
- Pharmacology and drug dosage calculations
- Terrorist awareness and weapons of mass destruction
- Basic trauma life support certification
- Instructional theory—development of lesson plans
- Use of A/V public speaking equipment
- Mentorship

**Mentorship/field rotations:** This course requires a clinical mentorship for development of proficiency in patient skills. An assigned mentor will evaluate field performance and document basic skill competency.

**Energy and Power DTE8448****Grade Level:** 10, 11, or 12 ((36 weeks)

Energy and Power DTE8495

**Grade Level:** 10, 11, or 12 (18 weeks)

In this single-period laboratory course, students learn about the application of power and energy systems to common Power devices and transportation vehicles and apply theory to the practical servicing of common machines such as small gasoline engines, outboard motors, motorcycles, and lawn mowers.

**Engineering Drawing/Design DTE8436****Grade Level:** 10, 11, or 12 (36 weeks)**Engineering Drawing/Design DTE8493****Grade Level:** 10, 11, or 12 (18 weeks)**Prerequisite:** Technical Drawing/Design

Students use a graphic language for product design, technical illustration, assembly, patent, and aeronautical drawings. They increase their understanding of drawing techniques learned in the prerequisite course. Students use computers, calculators, and descriptive geometry and adhere to established standards to solve design problems. Throughout the course, they hold seminars, meet engineers, and tour technical design firms in order to learn about the benefits of the course on their future study and career. Completion of this course may contribute to a student's preparation for the AutoCAD 2000 certification examination.

**Entrepreneurship Education CCN9094****Grade Levels:** 11-12 (36 weeks)

This course is designed for students who wish to concentrate on strategies for career development through ownership/management of their own businesses. Although individual skills are emphasized, the focus of the course is on development of a business plan, including the following: Determination of type of business enterprise, legal considerations, location selection, financing, steps in getting the enterprise started, marketing strategy, and interaction with successful entrepreneurs.

**Equine Management and Production ANR8015****Grade Levels:** 9-12 (18 weeks)**Equine Management and Production ANR8080****Grade Levels:** 9-12 (36 weeks)

In this course, students learn how to care for and manage horses. Equine health, nutrition, management, reproduction, training, evaluation, and showmanship are the major instructional areas. In addition, course content includes instruction in the tools, equipment, and facilities for equine enterprises. Business management topics include the economics of boarding, training, and merchandising horses. Leadership development activities are included, and participation in FFA activities is encouraged.

**Exploring Entrepreneurship CCN9093****Grade Levels:** 9-12 (18 weeks)

Students explore qualities of individual enterprise, or the art of succeeding in a career. They develop skills needed to advance in an ever-changing work environment. Specifically, students develop competencies in decision making, long-range planning, effective communication, accountability, responsibility, and continuing education. Both individual development and business plan development are examined as concurrent career pathways.

**Family and Consumer Sciences Dual Enrollment with Postsecondary FCS8266**

For information, please contact the Family and Consumer Sciences Service, Virginia Department of Education.

**Family and Human Services I FCS8264****Grade Level:** 11 (36 weeks, 2 or 3 periods per day or equivalent time per week)**Prerequisite:** Introduction to Family and Human Services (recommended)

Students prepare for occupations related to individual and family health; consumer and community special services; nutrition and dietary modification; home maintenance, management, and adaptation to physical restrictions; services to homebound individuals of all ages; and services to the terminally ill. Critical thinking, practical problem solving, and entrepreneurship opportunities within the field of home and community care are emphasized. Teachers incorporate the skills of math, science, written and oral communications, and computer applications when appropriate in the content.

**Family and Human Services II FCS8265**

**Grade Level:** 12 (36 weeks, 2 or 3 periods per day or equivalent time per week)

**Prerequisite:** Family and Human Services I

Students continue to prepare for occupations related to individual, family, community health and well-being. Critical thinking, practical problem solving, and entrepreneurship opportunities within the field of home and community care are emphasized. Cooperative (on-the-job) education or an unpaid internship under the supervision of the instructor and a registered nurse is an important part of the second-level course. Teachers incorporate the skills of math, science, written and oral communications, and computer applications when appropriate in the content.

**Family Relations FCS8223**

**Grade Levels:** 9-12 (18 weeks, single period)

**Family Relations FCS8225**

**Grade Levels:** 9-12 (36 weeks, single period)

Students enrolled in Family Relations focus on analyzing the significance of the family, nurturing human development in the family throughout the life span, analyzing factors that build and maintain healthy family relationship, developing communication patterns that enhance family relationships, dealing effectively with family stressors and conflicts, managing work and family roles and responsibilities, and analyzing social forces that influence families across the life span. Teachers highlight basic skills of math, science, and communication when appropriate in the content.

**Farm Equipment Operator ANR8052**

**Grade Level:** 12 (suggested) (36 weeks)

This helps high school seniors acquire job-entry skills as operators of farm equipment. Instruction includes units on the safe operation and preventative maintenance of equipment used in planting, cultivating, fertilizing, dusting, spraying, and harvesting crops. Cooperative education is recommended as a part of this course.

**Fashion Design I FCS8280**

**Grade Level:** 11 (36 weeks, 2 or 3 periods per day or equivalent time per week)

**Prerequisite:** Introduction to Fashion Design and Marketing is recommended.

Students prepare for occupations concerned with the spectrum of clothing, apparel, and textiles production and services, including but not limited to construction, fabric and fabric care, pattern design, principles of clothing construction and selection, fitting and alterations for ready-to-wear garments, custom tailoring, and clothing maintenance. Critical thinking, practical problem solving, and entrepreneurship opportunities within the field of fashion are emphasized. Teachers highlight the basic skills of math, science, and communication when appropriate in content.

**Fashion Design II FCS8281**

**Grade Level:** 12 (36 weeks, 2 or 3 periods per day or equivalent time per week)

**Prerequisite:** Fashion Design I

Continuing their study as an in-depth extension of Fashion Design I, students focus on occupational skills identified as essential for fashion design aides, drapers, fabric demonstrators, alteration aides, costume aides, menders, and fabric/accessories clerks. Cooperative (on-the-job) education or an internship under the supervision of the instructor is an option. Critical thinking, practical problem solving, and entrepreneurship opportunities within the field of fashion are emphasized. Teachers highlight the basic skills of math, science, and communication when appropriate in content.

**Fashion Marketing MKT8140 (co-op)****Fashion Marketing MKT8141 (oe)**

**Grade Level:** 11 or 12 (suggested) (36 weeks)

In this specialized course, students gain basic knowledge of the apparel and accessories industry and skills necessary for successful employment in apparel businesses. Students develop general marketing skills necessary for successful employment in fashion marketing, general marketing skills applied to the apparel and accessories industry, and specialized skills unique to fashion marketing. Personal selling, sales promotion, purchasing, physical distribution, market planning, and product/service technology as well as academic skills (mathematics, science, English, and history/social science) related to the content are part of this course. Computer/technology applications supporting this course are studied.

**Finance BUS6120****Grade Levels:** 10, 11, 12 (36 weeks)**Finance BUS6121****Grade Levels:** 10, 11, 12 (18 weeks)

Students explore many facets of financial decision-making involved in daily life. Skills in money management, record keeping, and banking are enhanced through the study of basic concepts of economics, insurance, credit, and other related topics. As a year offering, the course will also prepare students occupationally to plan, manage, and analyze the financial and monetary aspects and success of business enterprises, banking institutions, or other organizations.

**Financial Services Marketing MKT8180 (co-op)****Financial Services Marketing MKT8181 (oe)****Grade Level:** 11 or 12 (36 weeks)

In this specialized course, students with a career interest in the financial services marketing field gain an understanding of the financial services marketing industry, with emphasis in the areas of monetary systems; types of financial institutions; careers in finance; the Federal Reserve System; negotiable instruments; and advertising and public relations associated with this field. Skills necessary for entry-level employment in this industry area include mathematics, oral and written communication, and accounting procedures. Academic skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting this course are studied.

**Firefighting I TDI8705****Grade Level:** 10 or 11**Firefighting II TDI8706****Grade Level:** 11 or 12**Prerequisite:** Firefighting I**Firefighting III TDI8707****Grade Level:** 12**Prerequisite:** Firefighting II

Students learn to fight fires and control the outbreak of fire. Instruction includes fire department organization; use of various kinds of equipment such as extinguishers, pumps, hoses, ropes, ladders, gas masks, hydrants, and standpipe and sprinkler systems; methods of entry and rescue; salvage practices and equipment; and fire and arson inspection and investigation techniques.

**Floral Design I ANR8055****Grade Level:** 11 or 12 (suggested) (36 weeks)**Prerequisite:** Horticultural Sciences (ANR8034)

This course offers an expanded study of floral design, which was begun in the Horticulture Sciences course. Course content covers career opportunities, floral design foundations, design applications, and the marketing of floral products. Specific design styles to be examined include mass, mass-line, line, vase, wedding, balloon, holiday, and personal-adornment arrangements. The course also emphasizes leadership activities and opportunities to participate in FFA events.

**Floral Design II ANR8056****Grade Level:** 11 or 12 (suggested) (36 weeks)**Prerequisite:** Floral Design I (ANR8055)

Course content covers a wide range of specialty floral designs, including historical designs, contemporary designs, oriental designs, seasonal designs, floragraphy, and designs for dried arrangements, novelty pieces, special events, and sympathy work. The business aspect of the industry is addressed through the study of pricing, advertising, shop design, wire services, delivery processes, professional organizations, sales techniques, and continuing education. The course emphasizes leadership activities and opportunities to participate in FFA events.

**Floriculture ANR8038****Grade Level:** 11 or 12 suggested (36 weeks)**Prerequisite:** Horticulture Sciences ANR8034

Students learn the basics of the horticulture plant production industry. Instruction includes the science of plant production as well as marketing and business management. Plant material identification and floral design round out this course to prepare the student for an entry-level position in the floriculture industry. Participation in FFA activities provides leadership development opportunities.

**Forestry, Wildlife, and Soil Management (IV) ANR8042****Grade Level:** 11 or 12 (suggested) (36 weeks)

This course includes instruction in forest protection and harvesting, fish pond ecology and management, planning and operation of a hunting and fishing preserve, wildlife ecology and management, soil and water management systems, service and operation of large power equipment, and leadership training.

**Fundamentals of Marketing MKT8110****Grade Level:** 10 (36 weeks)

Fundamentals of Marketing is a basic elective course offered in the three-year Marketing program. Students gain a basic understanding of marketing and its importance and develop fundamental social, economic, mathematical, marketing, job search, and occupational decision-making skills necessary for successful initial employment in retail, wholesale, or service businesses. Academic skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting this course are studied.

**General Mechanics for the Disadvantaged ANR8070**

For information, please contact the Agricultural Education Service, Virginia Department of Education.

**GRADS Family Focus FCS8277****Grade Levels:** 9-12 (18 weeks)**GRADS Family Focus FCS8278****Grade Levels:** 9-12 (36 weeks)**GRADS Work Focus FCS8213****Grade Levels:** 11-12 (36 weeks, single period)

Students enrolled in the Graduation, Reality, and Dual-role Skills Program (GRADS) concentrate on developing self-esteem; using effective communication skills; maintaining positive relationships; promoting wellness, prenatal, and postnatal care; evaluating the cost of parenthood; adjusting to parenthood; understanding child development; providing child care; managing family relationships; exploring careers; applying employability skills; managing economic resources and expenditures; and balancing work and family. Teachers highlight the basic skills of math and science when appropriate in the content.

**Graphic Communications Systems DTE8458****Grade Level:** 10, 11, or 12 (36 weeks)**Graphic Communications Systems DTE8494****Grade Level:** 10, 11, or 12 (18 weeks)

This course provides experiences related to a wide range of tools and materials used to reproduce information and images. Several mediums are used, including paper, metal, plastic, and fabric. Students develop competencies in message design, composition and assembly, film conversion and assembly, and message transfer and product conversion.

**Graphic Imaging Technology I TDI8660**

**Grade Level:** 10 or 11

**Graphic Imaging Technology II TDI8661**

**Grade Level:** 11 or 12

**Prerequisite:** Graphic Imaging Technology I

**Graphic Imaging Technology III TDI8662**

**Grade Level:** 12

**Prerequisite:** Graphic Imaging Technology II

Graphic Imaging Technology prepares students for a career in what has traditionally been called the printing industry. Students learn to design and produce print media, which includes layout, electronic imaging, offset printing, bindery and finishing, and other graphic arts related to the printing industry. Graphic Imaging Technology programs may be certified by PrintED, the certification agency for Printing Industries of America. See Graphic Imaging Technology Framework for additional information.

**Greenhouse Plant Production and Management ANR8035**

**Grade Level:** 11 or 12 suggested (36 weeks)

**Prerequisite:** Horticulture Sciences

Students enrolled in this course learn the operating procedures for a greenhouse. Units of instruction include developing plant production facilities, science application in plant production, and identification of plants. Business management and marketing skills are emphasized to prepare students for careers in the greenhouse plant production and management industry. Leadership development is offered through participation in FFA.

**Health and Medical Sciences Dual Enrollment with Postsecondary HMS8394**

For information, please contact the Health and Medical Sciences Service, Virginia Department of Education.

**Health Assistant I HMS8331**

**Grade Level:** 11 (36 weeks, double period)

Students explore careers in the allied health field by developing basic skills common to several assisting careers. They study body structure and function, principles of health, microbes and disease, and an overview of the national health and patient care system. Supervised work education or on-the-job training may begin as part of the course in hospitals, nursing homes, or public health agencies and is managed by the HOE teacher.

**Health Assistant II HMS8332**

**Grade Level:** 12 (36 weeks, triple period)

**Prerequisite:** Health Assistant I

Students choose advanced preparation in one of the four tracks—dental, allied health, medical, and nursing—for further classroom instruction and clinical practice. Course content is based on validated competencies for a specific worker such as dental aide, medical assistant, physical therapy aide, or respiratory therapy assistant. Students achieve advanced skills in assisting with therapeutic and emergency measures, patient rehabilitation, care of the elderly; preparing the patient for examination; and performing simple laboratory procedures and health tests. Students prepare to assist physicians, dentists, nurses, and/or therapists in hospitals, nursing homes, clinics, and public health facilities in such jobs as orderly, sterile supply aide, and physical therapy aide. Successful completion may prepare students to take the exam for Certified Nurse Aide and employment in areas such as certified nursing assistant, dental aide, and respiratory therapy assistant.

**Heating, Ventilation, Air Conditioning, and Refrigeration (HVACR) I TDI8503**

**Grade Level:** 10 or 11

**HVACR II TDI8504**

**Grade Level:** 11 or 12

**Prerequisite:** HVACR I

**HVACR III TDI8505**

**Grade Level:** 12

**Prerequisite:** HVACR II

This instructional program prepares students to install, repair, and maintain the operating conditions of heating, air conditioning, and refrigeration systems. Completion of this sequence may prepare students for certification exams for a variety of air conditioning/air distribution system technicians.

**Home Health Aide HMS8364****Grade Levels:** 11, 12**Prerequisites:** None—Introduction to Health and Medical Sciences is strongly recommended.

Home Health Aide is designed as an "occupational mix " program that provides entry-level skills within the health-related field. It provides students with the knowledge, understanding, and basic skill training necessary for entering advanced health and medical sciences programs or locating entry-level employment as a certified nurse's aide/home health aide in a hospital, nursing home, home for adults, private home, or other health care setting. To ensure maximum skills and employment opportunities, the curriculum is designed to be taught by both the Health and Medical Sciences instructor and the Family and Consumer Sciences teacher. Access to a clinical training facility is essential. Home Health Aide may be offered as a three-hour block senior intensified program or may (local option) be scheduled as a two year, two-hour block at the 11th and 12th grades.

**Horticulture Sciences ANR8034****Grade Level:** 11 or 12 suggested

In this course, students develop the necessary knowledge, skills, habits, and attitudes for entry-level employment and advancement in areas such as floriculture, landscape design, greenhouse operation, nursery plant production, and turf management. They receive instruction in using soil and other plant-growing media and in identifying, propagating, and growing horticultural plants in the greenhouse and land laboratory. Instruction is provided in safety practices and leadership development.

**Hospitality Services I FCS8202****Grade Level:** 11 (36 weeks, 2 or 3 periods per day or equivalent time per week)**Prerequisite:** Introduction to Hospitality, Tourism, and Recreation (recommended)

Students begin preparation for employment in the systemwide hospitality and/or hotel/motel and restaurant related industries by focusing on principles of operations in the travel and tourism industries, hotel and lodging facilities, food services, recreation, hospitality planning, and business operations. Critical thinking, practical problem solving, and entrepreneurship opportunities within the field of hospitality are emphasized. Teachers highlight the basic skills of math, science, and communication when appropriate in content.

**Hospitality Services II FCS8203****Grade Level:** 12 (36 weeks, 2 or 3 periods per day or equivalent time per week)**Prerequisite:** Hospitality Services I (recommended)

Students continue this in-depth extension of Hospitality Services I by mastering occupational skills for workers serving as airline flight attendants, airline lounge receptionists, passenger service representatives, hosts/ hostesses for hotels/motels, house cleaners, housekeeping maids, linen room attendants, guest service clerks, establishment guides, lodging facilities attendants, recreation aides, weight reduction leaders, and entrepreneurs. Cooperative (on-the-job) education or an internship under the supervision of the instructor is an option. Critical thinking, practical problem solving, and entrepreneurship opportunities within the field of hospitality are emphasized. Teachers highlight the basic skills of math, science, and communication when appropriate in content.

**Hotel/Motel Marketing MKT8160 (co-op)****Hotel/Motel Marketing MKT8161 (oe)****Grade Level:** 11 or 12 (36 weeks)

In this specialized course, students with a career interest in the field of hospitality and recreation develop skills in the areas of hotel front-office procedures, human relations, food and beverage service, purchasing, tourism, travel, and sales promotion. In addition, students obtain a thorough understanding of the hotel-motel industry and the career options available. Academic skills (mathematics, science, English, and history/social science) related to the content are part of this course. Computer/technology applications supporting this course are studied.



**Individual Development FCS8209**

**Grade Levels:** 9-12 (18 weeks, single period)

**Individual Development FCS8210**

**Grade Levels:** 9-12 (36 weeks, single period)

Students enrolled in Individual Development focus on encouraging personal potential of self and others throughout the life span; enhancing positive views of self and others; managing stressful situations; formulating a plan to achieve career goals; forming healthy, caring relationships with family members and peers; managing conflict; choosing responsible ways to express oneself; and evaluating the importance of responsible parenting to individuals, families, and society. Teachers highlight basic skills of math, science, and communication when appropriate in the content.

**Industrial Cooperative Training—non co-op TDI8901**

**Grade Level:** 10

**Industrial Cooperative Training I—co-op TDI8902**

**Grade Level:** 11 or 12

**Industrial Cooperative Training II—co-op TDI8903**

**Grade Level:** 12

**Prerequisite:** ICT I

**Industrial Cooperative Training—SIP TDI8904**

**Grade Level:** 12

Students have the opportunity to prepare for employment related to the many fields within the areas of trade, industrial, or technical occupations. Each student receives on-the-job training and instruction related to his or her chosen trade area. The ICT SIP program can be operated as an extension of any day-trade program.

**Industrial Maintenance Technology I TDI8575**

**Grade Level:** 10 or 11

**Industrial Maintenance Technology II TDI8576**

**Grade Level:** 11 or 12

**Prerequisite:** IMT I

**Industrial Maintenance Technology III TDI8577**

**Grade Level:** 12

**Prerequisite:** IMT II

This program focuses on the adjustment, maintenance, part replacement, and repair of tools, equipment, and machines used in industry, including hydraulic and pneumatic systems.

**Information Technology Fundamentals BUS6670**

**Grade Levels:** 9, 10 (36 weeks)

**Prerequisite:** Keyboarding\* is recommended.

Information Technology IT Fundamentals introduces the essential skills needed for students to pursue specialized programs leading to technical and professional careers and certifications in the IT industry. Students have an opportunity to investigate career opportunities in four major IT areas: Information Services and Support, Network Systems, Programming and Software Development, and Interactive Media. The focus of the IT Fundamentals course is on introducing skills related to information technology basics, Internet fundamentals, network systems, computer maintenance/upgrading/troubleshooting, computer applications, programming, graphics, Web page design, and interactive media. Students explore ethical issues related to computers and Internet technology and develop teamwork and communication skills that will enhance their employability.

\*Keyboarding course(s) or teacher-approved demonstrated and documented touch keyboarding skills

**International Baccalaureate Business Management IB6135****International Baccalaureate Information Technology in a Global Society IB6613**

For description, contact Virginia Department of Education, Business and Information Technology Program.

**International Marketing MKT8135 (oe)****Grade Levels:** 11, 12 (suggested) (36 weeks)**Prerequisites:** None (We recommend that students be enrolled in a foreign language course either concurrently or prior to enrolling in this course.)

International Marketing is a specialized course for students with a career interest in the field of international trade. Students gain an understanding of the various careers in international trade, finance, shipping, and marketing and consider fundamental concepts, principles, and theories of marketing in an international setting. Course content blends macroeconomic and microeconomic theory with international culture, politics, legal issues, concepts, practices, and applications. Internships may be available to provide students with additional opportunities for "hands-on" experiences in international marketing. Academic knowledge and skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting this course are studied.

**Internet Marketing MKT8125 (oe)****Grade Levels:** 11, 12

Students learn about the paperless exchange of business and marketing information, using technology (i.e., Internet, e-mail, electronic data interchange, and electronic funds transfer). Included in this course is an overview of the technology of Web servers, clients, and net infrastructure and the background of this fast-growing market; the economics of electronic markets; marketing research; advertising on the Web and Web page basics; pricing information; security and encryption; and on-line business opportunities. Academic skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting this course are studied.

**Interior Design I FCS8295****Grade Level:** 11 (36 weeks, 2 or 3 periods per day or equivalent time per week)**Prerequisite:** Introduction to Housing, Home Furnishings, and Design (recommended)

Students prepare for employment in the entire spectrum of home furnishings and decoration by acquiring skills that include selection, purchase, design, and decoration of home furnishings and equipment; floral design; accessory construction, and textiles and prepare for continuing education leading to a career in interior design, space planning, or interior architecture. Critical thinking, practical problem solving, and entrepreneurship opportunities within the field of interior design are emphasized. Teachers incorporate the skills of math, science, written and oral communication, and computer application when appropriate in the content.

**Interior Design II FCS8296****Grade Level:** 12 (36 weeks, 2 or 3 periods per day or equivalent time per week)**Prerequisite:** Interior Design I (recommended)

Students engage in an in-depth extension of Interior Design I by focusing on occupational skills for workers employed as color consultants; kitchen design consultants; interior design aides; showroom assistants; furniture rental consultants; sales associates for china, silver, curtains, draperies, furniture, floor coverings, and household appliances; and residential and commercial property assistant managers. Cooperative (on-the-job) education or an internship under the supervision of the instructor is an option. Critical thinking, practical problem solving, and entrepreneurship opportunities within the field of interior design are emphasized. Teachers highlight the basic skills of math, science, and communication when appropriate in content.

**Introduction to Culinary Arts FCS8249****Grade Levels:** 10-12 (18 weeks, single period)**Introduction to Culinary Arts FCS8250****Grade Levels:** 10-12 (36 weeks, single period)

The competencies focus on identifying and exploring the individual careers within the food service industry. Units of study include food science and technology, dietetics and nutrition services, contemporary cuisines and service styles, food and beverage production and preparation, and food safety and sanitation. Teachers highlight the basic skills of math, science, and communication when appropriate in the content.

**Introduction to Early Childhood Education and Services FCS8233****Grade Levels:** 10-12: (18weeks, single period)**Introduction to Early Childhood Education and Services FCS8234****Grade Levels:** 10-12: (36 weeks, single period)

The child care and education competencies focus on the principles of child growth and development; development of self-concepts and building self-esteem; learning experiences for children; principles of guiding children; healthy and safe environments; career development; and careers related to child care. Teachers highlight basic skills of math, science, and communication when appropriate in the content.

**Introduction to Engineering DTE8490****Grade Level:** 10, 11, or 12 (36 weeks)

While undergoing an orientation to the careers and challenges of engineering, students are actively involved with high-tech devices, engineering graphics, and mathematical concepts and scientific principles through problem-solving experiences. Activities in descriptive geometry, materials science, and technical systems challenge students as they communicate information through seminars, technical reports, and idea sharing.

**Introduction to Family and Human Services FCS8237****Grade Levels:** 10-12 (18 weeks, single period)**Introduction to Family and Human Services FCS8238****Grade Levels:** 10-12 (36 weeks, single period)

The focus of Introduction to Family and Human Services is practical problem solving, research, critical thinking, and career decision making. Professional opportunities within the cluster of health, human, and public service are identified and analyzed. Career investigation includes the areas of elder and intergenerational care services as well as family and social services. Teachers will incorporate the skills of math, science, written and oral communication, and computer applications when appropriate in the content

**Introduction to Fashion Design and Marketing FCS8247****Grade Levels:** 10-12 (18 weeks, single period)**Introduction to Fashion Design and Marketing FCS8248****Grade Levels:** 10-12 (36 weeks, single period)

The fashion design and merchandising competencies focus on identifying and exploring the individual careers within the fashion design, manufacturing, and merchandising industry. Units of study include the relationships that exist among all areas of the clothing industry; related global and economic issues; exploration of careers in color, design, and finishing; auxiliary fashion industries; clothing maintenance, alterations, and repair; entrepreneurial opportunities in related areas; and the skills and characteristics necessary for success in careers in the textile, design, apparel production, and fashion merchandising industries. Teachers highlight the basic skills of math, science, and communication when appropriate in the content.

**Introduction to Fashion Design and Marketing MKT8148/MKT8149****Grade Levels:** 10, 11, 12 (18/36 weeks)

The marketing and fashion design competencies in this course focus on identifying and exploring individual careers within the fashion design, manufacturing, and marketing industry. Units of study include the relationships that exist among all areas of the clothing industry; related global and economic issues; exploration of careers in color, design, and finishing; auxiliary fashion industries; clothing maintenance, alterations, and repair; entrepreneurial opportunities in related areas; and the skills and characteristics necessary for success in careers in the textile, design, apparel production, and fashion marketing industries. Academic skills (math, science, and communication) related to the content are a part of this course.

**Introduction to Health and Medical Sciences HMS8302****Grade Level:** 9 or 10 (36 weeks, single period)

This course introduces the student to all health care careers and develops basic skills common to all health and medical sciences. It is recommended as the first course for the following occupational offerings: Practical Nursing I HMS8357, Nursing Assistant I HMS8360.

**Introduction to Hospitality, Tourism, and Recreation FCS8258****Grade Levels:** 10-12 (18 weeks, single period)**Introduction to Hospitality, Tourism, and Recreation FCS8259****Grade Levels:** 10-12 (36 weeks, single period)

Students enrolled in the hospitality, tourism, and recreation core focus on hospitality operations on a system-wide basis, including both travel arrangements and promotion and the provision of traveler facilities. The program includes instruction in principles of operation of travel and tourism, hotel and lodging facilities, food services, and recreation facilities industries; hospitality marketing strategies; and industry policies and regulations. Teachers highlight the basic skills of math, science, and communications when appropriate in the content.

**Introduction to Housing, Home Furnishings, and Design FCS8254****Grade Levels:** 10-12 (18 weeks, single period)**Introduction to Housing, Home Furnishings, and Design FCS8255****Grade Levels:** 10-12 (36 weeks, single period)

The housing, home furnishings, and design competencies focus on identifying and exploring the individual careers in all areas of housing and interior environments. Units of study include the physical and psychological aspects of environments; interior alternatives; historical, social, cultural, and geographical influences on the industry; investigation of careers in construction, real estate, home design, and home care and maintenance; identification of career options in residential and commercial interior design; store planning, institutional, and contract interior design; and the business aspects of careers related to environments. The individual characteristics and skills necessary for career success in the industry of housing and interior environments are investigated. Teachers highlight the basic skills of math, science, and communication when appropriate in the content.

**Introduction to Leadership CCN9091****Grade Levels:** 9-10 (18 weeks)

This course equips students with individual and group leadership skills. Course content includes leadership principles, officer training, parliamentary law, public speaking, effective communication, positive public relations skills, and techniques of organizing and conducting group meetings and activities. Students are encouraged to be active members of a community or school organization.

**Introduction to Marketing MKT8111****Grade Level:** 10 (18 weeks)

Students gain basic knowledge about marketing and its importance and basic skills important for entry-level marketing employment. Academic knowledge and skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting this course are studied.

**Introduction to Natural Resources (III) ANR8040****Grade Level:** 10 or 11 (suggested) (36 weeks)

Students develop knowledge and skills required for employment in occupations related to forestry and wildlife management; outdoor recreation; and air, soil, and water conservation. Because of the emphasis on different facets of natural resources management in different parts of the state, the course varies to meet local needs and interests.

**Keyboarding BUS6150****Grade Level:** 6, 7, or 8 (6/9/12/18 weeks)

This course is designed for middle school students to develop and enhance touch skills for entering alphabetic, numeric, and symbol information on a keyboard. Students compose and produce personal, educational, and professional documents.

**Keyboarding BUS6151****Grade Levels:** 9, 10, 11, 12 (18 weeks)

This course is designed for secondary school students to develop and enhance touch skills for entering alphabetic, numeric, and symbol information on a keyboard. Students compose and produce personal, educational, and professional documents. (Students who can demonstrate touch keyboarding skills may test out and enter into the applications semester—BUS6153—to develop document preparation skills.)

**Keyboarding Applications BUS6152****Grade Levels:** 9, 10, 11, 12 (36 weeks)

This course is designed for secondary school students to develop and enhance touch skills for entering alphabetic, numeric, and symbol information on a keyboard. Students compose and produce a variety of personal, educational, and professional documents.

**Keyboarding Applications BUS6153****Grade Levels:** 9, 10, 11, 12 (18 weeks)**Prerequisite:** Keyboarding (BUS6150 or BUS6151)\*

Students enhance touch skills for entering alphabetic, numeric, and symbol information on a keyboard. Students compose and produce a variety of personal, educational, and professional documents. (Students may enroll in this applications semester—6153—after successful completion of previous keyboarding coursework or a documented performance test/record of 6150 or 6151 competencies.)

\*Keyboarding course(s) or teacher-approved demonstrated and documented touch keyboarding skills

**Landscaping ANR8036****Grade Level:** 11 or 12 suggested (36 weeks)**Prerequisite:** Horticulture Sciences

In this course, students develop the necessary knowledge, skills, habits, and attitudes for entry-level employment and advancement in areas such as landscape design, landscape construction, and landscape maintenance. They receive instruction in sketching and drawing, analyzing a landscape site, designing for function and aesthetics, identifying and selecting landscape plants, purchasing and installing plants, and maintaining the landscape by watering, fertilizing, mulching, pruning, and controlling pests.

**Leadership Development CCN9092****Grade Levels:** 11-12 (18 to 36 weeks)

Students develop competencies in identifying individual aptitudes in relation to effective leadership skills, understanding organizational behavior, using effective communication in the workplace, handling human resources and organizational problems, supervising and training employees, resolving conflict, and planning for the future. Continuing education in leadership is emphasized as well as practical leadership experiences in cooperation with school and community leaders.

**Legal Systems Administration BUS6735****Grade Levels:** 11, 12 (36 weeks)**Legal Systems Administration BUS6736****Grade Levels:** 11, 12 (18 weeks)**Prerequisites:** Keyboarding Applications\*

Students completing Office Administration and wishing to gain employment in the legal field may take this course to learn how to use legal terminology and procedures useful in preparing legal documents and functioning effectively in a law office. When this course is offered as a daily multiple-period class, the competencies identified in the Office Administration course may be included. Completion of this course, when combined with Accounting and Office Administration, may prepare students for the certification exam for Accredited Legal Professional. Completion may also lead to MOS certification.

\*Keyboarding course(s) or teacher approved demonstrated and documented touch keyboarding skills

**Life Planning FCS8226****Grade Levels:** 9-12 (18 weeks, single period)**Life Planning FCS8227****Grade Levels:** 9-12 (36 weeks, single period)

Students enrolled in Life Planning focus on developing a life management plan; caring for self and others to ensure wellness; building and maintaining constructive relationships; building and maintaining strong, functional families; developing strategies for lifelong career planning; coordinating personal and career responsibilities; and establishing a plan for using resources. Teachers highlight the basic skills of math, science, and communication when appropriate in the content.

**Make It Your Business BUS6110****Grade Levels:** 6, 7, 8, 9 (6/9/12 weeks)**Make It Your Business BUS6111****Grade Levels:** 6, 7, 8, 9 (18 weeks)

Students are provided opportunities to run a small group or class business based on their own design for providing a service or product needed at their school. Students learn business terminology, basic entrepreneurship concepts, and fundamental business operating principles in this course. Design of course content provides for interdisciplinary instruction.

**Make It Your Business MKT8109****Grade Levels:** 6, 7, 8, 9 (6 weeks)**Make It Your Business MKT8112****Grade Levels:** 6, 7, 8, 9 (9 weeks)**Make It Your Business MKT8113****Grade Levels:** 6, 7, 8, 9 (12 weeks)**Make It Your Business MKT8114****Grade Levels:** 6, 7, 8, 9 (18 weeks)

Students are provided opportunities to run a small group or class business based on their own design for providing a service or product needed at their school. They learn business terminology, basic entrepreneurship concepts, and fundamental business operating principles in this course. Design of course content allows for interdisciplinary instruction. Academic knowledge and skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting this course are studied.

**Manufacturing Systems DTE8425****Grade Level:** 10, 11, or 12 (36 weeks)**Manufacturing Systems DTE8426****Grade Level:** 10, 11, or 12 (18 weeks)

This course provides an orientation to careers in various fields of manufacturing. Emphasis will be placed on the major systems in automated manufacturing, including design, electrical, mechanical, manufacturing processes, material handling, and quality control. Students participate in teams and produce manufacturing projects that demonstrate critical elements of manufacturing.

**Marketing MKT8120 (co-op)****Marketing MKT8121 (oe)****Grade Levels:** 11, 12 (36 weeks)

Students are introduced to functions and foundations involved in the marketing of goods, services, and ideas and achieve skills necessary for successful marketing employment. Students study risk management, selling, promotion, pricing, purchasing, marketing-information management, product/service planning, distribution, and financing. Foundation skills include economics, human resources, and marketing and business necessary for success in marketing occupations. Academic skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting this course are studied.

**Marketing Dual Enrollment with Postsecondary MKT8198**

For information, please contact the Marketing Program Specialist, Virginia Department of Education.

**Marketing Management MKT8132 (oe)****Grade Level:** 12 (suggested) (36 weeks)

High school seniors who plan to attend college with a concentration in marketing, business, or management and/or who have tentative plans to manage or own a business will benefit from this course. Students develop critical thinking and decision-making skills through the application of marketing principles to (a) small and large businesses, (b) nonprofit organizations, (c) the professions, (d) service industries, and (e) other institutions or associations that market products, services, ideas, or people. Academic knowledge and skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/ technology applications supporting this course are studied.

**Masonry I TDI8512****Grade Level:** 10 or 11**Masonry II TDI8513****Grade Level:** 11 or 12**Prerequisite:** Masonry I**Masonry III TDI8514****Grade Level:** 12**Prerequisite:** Masonry II

Students learn to use hand tools such as trowels, levels, and chisels and power tools such as concrete mixers to lay brick, concrete block, tile, and related materials.

**Materials and Processes Technology DTE8433****Grade Level:** 9, 10, or 11 (36 weeks)**Materials and Processes Technology DTE8478****Grade Level:** 9, 10, or 11 (18 weeks)

Students focus on industrial/technical materials and processes as they fabricate usable products and conduct experiments. Learning experiences include career analysis as well as the use of tools and equipment related to analysis, testing, and processing of metals, plastics, woods, ceramics, and composite materials. This single-period laboratory course is recommended for students interested in technical careers and others wishing to improve their consumer knowledge and technological literacy.

**Medical Assistant I HMS8345****Grade Level:** 11 (suggested) (36 weeks, double-period)**Prerequisites:** None—Introduction to Health and Medical Sciences is strongly recommended.

Students develop basic skills and techniques to assist the physician in the following areas: receptionist duties, patient examinations, cardio-pulmonary resuscitation, and simple laboratory tests. On-the-job clinical instruction may occur in physicians' offices or clinics and is coordinated by the Health and Medical Sciences teacher.

**Medical Assistant II HMS8346****Grade Level:** 12 (suggested) (36 weeks, triple period)**Prerequisites:** Medical Assistant I

Students further develop medical-assisting skills and techniques learned in Medical Assistant I. They also learn medical economics; assembly and maintenance of patient records; care of equipment; special diagnostic testing such as EKG, visual, and audio testing machines; and assistance with office therapy. Advanced on-the-job clinical experience in physicians' offices or clinics is a part of the course. Successful completion of the program leads to employment in physicians' offices or clinics. Keyboarding is recommended.

**Medical Systems Administration BUS6730****Grade Levels:** 11, 12 (36 weeks)**Medical Systems Administration BUS6731****Grade Levels:** 11, 12 (18 weeks)**Prerequisites:** Keyboarding Applications\*

Students completing Office Administration and wishing to gain employment in the medical field may take this course to learn how to use medical terminology and procedures useful in developing medical documents and functioning effectively in a medical office environment. When this course is offered as a daily multiple-period class, the competencies identified in the Office Administration course may be included.

\*Keyboarding course(s) or teacher approved demonstrated and documented touch keyboarding skills

**Medical Terminology HMS8383****Grade Levels:** 10-12 (18 weeks)**Prerequisite:** None —Introduction to Health and Medical Sciences is strongly recommended.

Medical Terminology is designed to help students learn health care language and is presented in logical order, beginning with each body system's anatomy and physiology and progressing through pathology, diagnostic procedures, therapeutic interventions, and finally pharmacology. Concepts, terms, and abbreviations for a topic are also presented to the students.

**Nail Technician I TDI8692****Grade Level:** 10 or 11**Nail Technician II TDI8693****Grade Level:** 11 or 12**Prerequisite:** Nail Technician I

Students learn to manicure, pedicure, install and maintain artificial nails, and apply concepts associated with bacteriology, sanitation, nail disorders, anatomy and physiology, and safety. The course requires a minimum of 540 hours. Completion prepares students for the Virginia state licensing examination in Nail Technician.

**Natural Resources Business Management (V) ANR8044****Grade Level:** 12 (suggested) (36 weeks)

Much of the instruction in this course may be individualized. Major learning areas include processing forest products, lumber grading, and determining the feasibility of establishing, financing, and managing a business such as forestry, outdoor recreation, wildlife, or urban conservation. Based upon interests, students may receive instruction in developing and operating campgrounds, hiking and riding trails, riding stables, marinas, vacation farms, and farm ponds. Operation and maintenance of equipment is also emphasized. Leadership training is an important area of instruction.

**Notetaking BUS6241****Grade Levels:** 9, 10, 11, 12 (36 weeks)**Notetaking BUS6242****Grade Levels:** 9, 10, 11, 12 (18 weeks)**Prerequisite:** Keyboarding\* recommended

Students learn an easy, abbreviated writing system of notetaking that enables them to take and transcribe notes for educational, business, or personal use. Students explore reasons for taking notes, ways to listen effectively, and strategies for improving communication and study skills for academic success.

\*Keyboarding course(s) or teacher approved demonstrated and documented touch keyboarding skills

**Nursing Assistant I HMS8360****Grade Level:** 11 or 12 (36 weeks)**Prerequisites:** None —Introduction to Health and Medical Sciences is strongly recommended.

Nursing Assistant I, offered as a single-, double-, or triple-period occupational preparation course at the 11th-grade level, emphasizes the study of nursing occupations as related to the health care system. Students study normal growth and development, simple body structure and function, and medical terminology and are introduced to microbes and disease. They receive elementary skill training in patient-nurse's assistant relationships; taking and recording of vital signs; cardiopulmonary resuscitation; and bathing, feeding, dressing, and transporting of patients in hospitals and nursing homes. Limited on-the-job instruction in nursing homes and hospitals is part of the course. This course can be used as an introduction to practical nursing or to prepare the student for Nursing Assistant II so that all competencies for a certified nursing assistant are met.



**Nursing Assistant II HMS8362****Grade Level:** 12 (suggested)(36 weeks)**Prerequisites:** Nursing Assistant I

Nursing Assistant II is a double-or triple-period occupational preparation course, emphasizing advanced skill training in areas such as catheter care, range of motion, bowel and bladder training, care of the dying, selected procedures for maternal and infant care, and admission and discharge procedures. Students learn diseases and body systems as related to advanced clinical care of the acute medical-surgical patient, the chronically ill, and the elderly. On-the-job instruction in a licensed nursing home is part of the course. Upon completion of the nurse's assistant program, the student is eligible to take the nursing assistant certification exam that leads to employment as a certified nursing assistant in hospitals and nursing homes.

**Nutrition and Wellness FCS8228****Grade Levels:** 9-12 (18 weeks, single period)**Nutrition and Wellness FCS8229****Grade Levels:** 9-12 (36 weeks, single period)

Students enrolled in Nutrition and Wellness focus on making choices that promote wellness and good health; analyzing relationships between psychological and social needs and food choices; choosing foods that promote wellness; obtaining and storing food for self and family; preparing and serving nutritious meals and snacks; selecting and using equipment for food preparation; and identifying strategies to promote optimal nutrition and wellness of society. Teachers highlight the basic skills of math, science, and communication when appropriate in the content.

**Office Administration BUS6621****Grade Level:** 10, 11, 12 (36 weeks)**Office Administration BUS6622****Grade Level:** 10, 11, 12 (18 weeks)**Prerequisite:** Keyboarding\*

Students enhance word processing and communication skills as they develop competencies needed by administrative support professionals. Students study office procedures such as information processing, telecommunications, electronic record management, and financial records management.

\*Keyboarding course(s) or teacher approved demonstrated and documented touch keyboarding skills

**Office Specialist I BUS6740 (Targeted Populations)****Grade Levels:** 9, 10, 11, 12 (36 weeks)**Office Specialist II BUS6741 (Targeted Populations)****Grade Levels:** 10, 11, 12 (36 weeks)**Office Specialist III BUS6742 (Targeted Populations)****Grade Levels:** 11, 12 (36 weeks)

Students complete the Office Specialist sequence identified locally or progress in the sequence until prepared to transfer into other business courses. Students develop skills in areas including keyboarding, word processing, office procedures, and records management. If a fourth year is needed, the teacher should use simulated activities in the following areas: word processing, spreadsheets, databases, telecommunications, desktop publishing, and records management.

**Operating the Farm Business (V) ANR8014****Grade Level:** 12 (suggested) (36 weeks)

Much of the content in this occupational preparation course may be provided through individualized instruction. Students focus on farming, farm management, and occupational experience as they receive instruction in adjusting, operating, and maintaining farm machinery and equipment and in planning and constructing farm buildings and facilities. Continued emphasis is placed on leadership training.

**Parenting FCS8231****Grade Levels:** 9-12 (18 weeks, single period)**Parenting FCS8232****Grade Levels:** 9-12 (36 weeks, single period)

Students enrolled in Parenting focus on assessing the impact of the parenting role in society; taking responsibility for individual growth within the parenting role; preparing for a healthy emotional and physical beginning for parent and child; meeting developmental needs of children and adolescents; building positive parent-child relationships; using positive guidance and discipline to promote self-discipline, self-respect, and socially responsible behavior; obtaining parenting information, support, and assistance; and planning ways that families and society can share in nurturing children and adolescents. Teachers highlight the basic skills of math, science, and communication when appropriate in the content.

**Pharmacy Technician (8305)****Grade Levels:** 11 or 12

The certificate program is designed to provide students the basic skills and knowledge to begin work as a Pharmacy Technician. The coursework will fulfill the requirements of the Board of Pharmacy and prepare students to take either the state examination or the national examination administered by the Pharmacy Technician Certification Board. Trained, experienced pharmacy technicians who can demonstrate the right skills and knowledge should be able to pursue many exciting and respected career options or postsecondary study in the field of pharmacy.

**Physical/Occupational Therapy HMS8385****Grade Level:** 11 or 12 (36 weeks, 1 or 2 class periods for 1 or 2 credits)**Prerequisites:** Algebra, Biology

The course is designed to provide an introduction to the professions of physical and occupational therapy. Students explore the principles and practices of therapists in the health care industry and participate in a clinical internship under the direct supervision of a licensed physical and/or occupational therapist. Clinical skills in the areas of physical therapy and occupational therapy will enable students to gain experience in rehabilitative care, which is practiced throughout the continuum of care and across the life span of individuals. After successful completion of this course, students will be prepared for employment as rehabilitation technicians or may seek higher education for specific degrees in a variety of fields such as physical therapy, occupational therapy, speech therapy, sports medicine, athletic training, chiropractic medicine, biology, or exercise physiology.

**Plumbing I TDI8551****Grade Level:** 10 or 11**Plumbing II TDI8552****Grade Level:** 11 or 12**Prerequisite:** Plumbing I**Plumbing III TDI8553****Grade Level:** 12**Prerequisite:** Plumbing II

Students learn to assemble, install, and repair pipes, fittings, and fixtures of heating, water, and drainage systems, according to specification and plumbing codes.

**Power and Transportation DTE8445****Grade Level:** 9, 10, or 11 (36 weeks)**Power and Transportation DTE8444****Grade Level:** 9, 10, or 11 (18 weeks)

Students survey the many broad sources of energy and power used in power and transportation systems. Instruction in this single-period course includes ways that (1) energy is converted to power; (2) power is transmitted and controlled; and (3) power is used through mechanical, fluid, and electrical devices. Students explore career opportunities in power and transportation fields and build projects, conduct experiments, and repair mechanical devices such as small engines, electrical motors, and outboard motors.

**Practical Nursing I HMS8357****Grade Level:** 11 (suggested)(18 weeks)**Prerequisites:** None—Introduction to Health and Medical Sciences is strongly recommended.

Students learn nursing care of patients of all ages, in various stages of sickness or wellness, and with a variety of disease conditions. They focus on human anatomy, body function, communication, community health, introduction to fundamental nursing skills, nutrition, drug therapy, and elementary medical-surgical nursing.

**Practical Nursing II HMS8358****Grade Level:** 12 (18 weeks)**Prerequisites:** Practical Nursing I

Instruction emphasizes introduction into pharmacology, normal life span (human growth and development), normal nutrition, nursing fundamentals, and nursing trends. Advanced emergency procedures and application of nursing procedures are demonstrated in a laboratory setting.

**Practical Nursing III HMS8359****Grade Level:** Adult, 13 (36 weeks, full-time)**Prerequisite:** Practical Nursing II

Classroom and clinical training are given in approved hospitals, licensed nursing homes, or home-care settings under the direction of a nurse educator. Instruction emphasizes administration of medicines, advanced and complex patient care, and practice with patients of all ages. Students learn advanced anatomy, physiology, and human behavior as related to health and disease, including mental illness. Upon successful completion of the total program, students qualify to take the practical nurse licensing examination.

**Precision Machining Technology I TDI8539****Grade Level:** 10 or 11**Precision Machining Technology II TDI8540****Grade Level:** 11 or 12**Prerequisite:** PMT I**Precision Machining Technology III TDI8541****Grade Level:** 12**Prerequisite:** PMT II

Students learn the basics of industrial safety and environmental protection; planning, management, and performance of machining jobs; quality control; process improvement; general maintenance; engineering drawings and sketches; and application of measurements, metalworking theory, properties of materials, and principles of CNC. Precision Machining Technology programs may be certified by NTMA (National Tooling and Machining Association), the certifying agency for the National Institute for Metalworking Skills (NIMS). See Precision Machining Technology Framework for additional information.

**Principles of Business and Marketing BUS6115****Grade Levels:** 9, 10 (36 weeks)**Principles of Business and Marketing BUS6116****Grade Levels:** 9, 10 (18 weeks)

Students explore the roles of business and marketing in the free enterprise system and the global economy. Students study how the American economy operates and prepare to make decisions as consumers, wage earners, and citizens.

**Principles of Business and Marketing MKT8115****Grade Levels:** 9, 10 (36 weeks)**Principles of Business and Marketing MKT8116****Grade Levels:** 9, 10 (18 weeks)

Students explore the roles of business and marketing in the free enterprise system and the global economy. Students study how the American economy operates and prepare to make decisions as consumers, wage earners, and citizens.

**Principles of Technology I DTE9811****Grade Level:** 10, 11, or 12 (36 weeks)

Students in this single-period laboratory science course apply physics and mathematics concepts through a unified systems approach to develop a broad knowledge base of the principles underlying modern technical systems. Students study seven technical principles: force, work, rate, resistance, energy, power, and force transformers, emphasizing how each principle plays a unifying role in the operation of mechanical, fluid, electrical, and thermal systems in high-technology equipment. This "principles and systems" approach to studying these technical principles provides a foundation for further education and career flexibility as technology and technical systems advance.

**Principles of Technology II DTE9812****Grade Level:** 11 or 12 (36 weeks)**Prerequisite:** Principles of Technology I (36 weeks)

Students continue to apply physics and mathematics concepts through a unified systems approach to expand their knowledge base of the principles underlying modern technical systems. This course focuses on seven technical principles: momentum, waves, energy converters, transducers, radiation, optical systems, and time constants, emphasizing how each principle plays a unifying role in the operation of mechanical, fluid, electrical, and thermal systems in high-technology equipment. This "principles and systems" approach to studying these technical principles provides a foundation for further education and career flexibility as technology and technical systems advance.

Students who complete Principles of Technology I (9811) and Principles of Technology II (9812) may use these courses to satisfy one (1) physics credit in laboratory science. A student must complete both courses in the sequence in order to receive laboratory science credit. The sequence of Principles of Technology I (9811) and Principles of Technology II (9812) will satisfy one (1) unit of credit in laboratory science for physics and one (1) elective credit. Students who enroll in Principles of Technology courses for a physics credit must have completed Algebra I and two (2) other laboratory science courses as specified by the accrediting standards prior to enrolling in Principles of Technology.

**Production Systems DTE8447****Grade Level:** 9, 10, or 11 (36 weeks)**Production Systems DTE8446****Grade Level:** 9, 10, or 11 (18 weeks)

Students plan, design, develop, and market products, using technology such as computer-aided manufacturing (CAM), computer numerical control (CNC), and robots used in flexible manufacturing systems. They analyze markets, design and develop prototypes, determine impact, and plan new businesses needed by people and society. Students consider the social, cultural, and economic impacts of automation. The class determines major production systems employed by local industries.

**Programming BUS6640****Grade Levels:** 10, 11, 12 (36 weeks)**Prerequisite:** Keyboarding\* and Information Technology Fundamentals are recommended.

Students explore computer concepts, use logic procedures, and implement programming procedures using one or more programming languages, such as Visual Basic, Java, and C++. In addition, HTML or JavaScripting is used to program Web pages.

\*Keyboarding course(s) or teacher approved demonstrated and documented touch keyboarding skills

**Public Safety I TDI8700****Grade Level:** 11 or 12**Public Safety II TDI8701****Grade Level:** 12**Prerequisite:** Public Safety I

Students learn basic procedures related to law enforcement and fire fighting occupations, including emergency medical services, traffic control, safety, crowd control, and fire prevention technology. The course requires a minimum of 540 hours.

**Radio Communications I TDI8640****Grade Level:** 10 or 11**Radio Communications II TDI8641****Grade Level:** 11 or 12**Prerequisite:** Radio Communications I**Radio Communications III TDI8642****Grade Level:** 12**Prerequisite:** Radio Communications II

Students learn basic electricity and electronics, including all aspects of safety as well as related mathematics. Activities provide the skills for obtaining a radio-telephone operator license. Students learn practices related to the management and operation of a broadcasting station.

**Real Estate Marketing MKT8191 (oe)****Grade Level:** 12 (suggested) (36 weeks)

Students gain skills related to sales, real estate financing, ownership rights, investments, ethics, and 60 hours of Real Estate Principles (requirements for admission to the Virginia Real Estate exam). Upon successful completion of the course, taught by an instructor approved by the Marketing Service and the Virginia Real Estate Commission, students are eligible to take the Virginia real estate licensing exam.

**Resource Management FCS8214****Grade Level:** 9-12 (18 weeks, single period)**Resource Management FCS8219****Grade Level:** 9-12 (36 weeks, single period)

Students enrolled in Resource Management focus on managing resources to achieve individual goals; making informed consumer choices; creating and maintaining a living environment that supports the well-being of individuals; living in a global environment; making decisions related to nutrition, clothing, and housing; and managing a household. Teachers highlight the basic skills of math, science, and communication when appropriate in the content.

**Robotic Workcell Technology I TDI8557****Grade Level:** 10 or 11**Robotic Workcell Technology II TDI8558****Grade Level:** 11 or 12**Prerequisite:** Robotic Workcell Technology I**Robotic Workcell Technology III TDI8559****Grade Level:** 12**Prerequisite:** Robotic Workcell Technology II

This course provides instruction in basic computer programming, electronics, motor control, and feedback systems used in assembly and manufacturing settings. In addition, students learn how to program programmable logic controllers for remote robotic manipulation.

**Sheet Metal I TDI8663****Grade Level:** 10 or 11**Sheet Metal II TDI8664****Grade Level:** 11 or 12**Prerequisite:** Sheet Metal I**Sheet Metal III TDI8665****Grade Level:** 12**Prerequisite:** Sheet Metal II

Students work with materials that are cast, formed, shaped, molded, heat treated, cut, twisted, pressed, fused, or stamped. Instruction includes the planning, manufacturing, assembling, testing, and repairing of mechanisms, machines, and structures.

**Small Animal Care I ANR8083****Grade Levels:** 8-12 (18/36 weeks)**Small Animal Care II ANR8084****Grade Levels:** 8-12 (18/36 weeks)

Students learn how to care and manage small animals, focusing on instructional areas in animal health, nutrition, management, reproduction, evaluation, training, and, when applicable, showmanship. Course content also includes instruction in the tools, equipment, and facilities for small animal care and provides activities to foster business management and leadership development. FFA activities are included.

**Small Engine Repair ANR8021****Grade Levels:** 9-12 (18 weeks)**Small Engine Repair ANR8082****Grade Levels:** 9-12 (36 weeks)

This course offers an intensive study of the operation, maintenance, and repair of small gasoline and diesel engines. Instructional topics include principles of operation of gasoline and diesel engines, tune-up and maintenance procedures, and disassembly, overhaul, and reassembly. Instruction may also include the operation of two cycle and four-cycle engines commonly found on lawn mowers, garden tractors, snow blowers, rotary tillers, chainsaws, and other equipment. The course emphasizes leadership activities and opportunities to participate in FFA functions. Completion of this course may prepare students for Outdoor Power Equipment Certification exams.

**Small Engine Repair I TDI8725****Grade Level:** 10 or 11**Small Engine Repair II TDI8726****Grade Level:** 11 or 12**Prerequisite:** Small Engine Repair I**Small Engine Repair III TDI8727****Grade Level:** 12**Prerequisite:** Small Engine Repair II

Students learn to maintain and repair small internal-combustion engines used on portable power equipment such as lawnmowers, chain saws, rotary tillers, motorcycles, and snowmobiles, and other 2- and 4 cycle engines.

**Specialty Horticulture Arts ANR8037****Grade Level:** 11 or 12 (suggested)**Prerequisite:** Horticultural Sciences (ANR8034)

This course covers a wide range of specialty topics, including topiary, fruit and vegetable production, interior plantscaping, terrariums, dish gardens, bonsai, container gardens, heirloom plants, container water gardens, bulb forcing, and hydroponics. Further study is devoted to gardens that are centered on such themes as healing, wildlife, fragrance, and handicapped accessibility. Entrepreneurial business and continuing education opportunities are also addressed. The course emphasizes leadership activities and opportunities for participate in FFA events.

**Sports, Entertainment, and Recreation Marketing MKT8175 (co-op)****Sports, Entertainment, and Recreation Marketing MKT8176 (oe)****Grade Levels:** 10, 11, 12 (36 weeks)

Students develop skills in the areas of marketing analysis, event marketing, communication, and human relations, along with a thorough understanding of the sports, entertainment, and recreation industry and career options available. Academic skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting this course are studied.

**Surgical Technologist I HMS8351****Grade Level:** 12 (36 weeks, triple period)**Prerequisites:** None—Introduction to Health and Medical Sciences or Nursing Assistant I is recommended.

Students acquire knowledge and assisting skills to function in association with licensed nurses and surgeons/physicians, providing the best possible care of the surgical patient. Instruction emphasizes human anatomy, medical terminology, cleanliness, asepsis, safety, and efficiency in the operating room.

**Surgical Technologist II HMS8352**

**Grade Level:** Adult, 13 (suggested) (4 months, full-time)

**Prerequisites:** Surgical Technologist I

Classroom and clinical training are given in selected approved hospitals under the direction of a nurse educator. Students learn operating room procedures and aseptic surgical techniques, including preparation and handling of materials and surgical instruments at the operating table. Upon successful completion of the program, students qualify to take the national certification exam.

**Teacher Cadet CCN9062**

**Grade Level:** 12 (36 weeks)

The Teacher Cadet course introduces seniors to a career in teaching and education. The primary elements of the curriculum components are *the learner*, *the school*, and *the teacher and teaching*. The components are intentionally broad in scope and provide a great deal of flexibility based on the career interest of a student. In addition to the fundamental curriculum components, all students are required to participate in an internship outside the teacher cadet classroom. The internship may involve the pre-school level through grade 12.

**Technical Drawing/Design DTE8435**

**Grade Level:** 9, 10, or 11 (36 weeks)

**Technical Drawing/Design DTE8434**

**Grade Level:** 9, 10, or 11 (18 weeks)

In this foundation course students learn the basic language of technical design, and they design, sketch, and make technical drawings, models, or prototypes of real design problems. The course is especially recommended for future engineering and architecture students.

**Technology Assessment DTE8407**

**Grade Level:** 11 or 12 (36 weeks)

**Technology Assessment DTE8406**

**Grade Level:** 11 or 12 (18 weeks)

**Prerequisite:** Technology Transfer

Technology Assessment is offered as a capstone course for students in high school. Students use their knowledge and abilities in math, science, and technology to analyze the contributions of technical devices to their homes and the world. Students use information they acquire through library research or computer databases to predict the future. They design futuristic products and use assessment to determine possible results. They also use computer graphics, videotapes, and design portfolios to present their newly created products and systems.

**Technology Education Dual Enrollment with Postsecondary DTE8498**

For information, please contact the Technology Education Service, Virginia Department of Education.

**Technology Foundations DTE8403**

**Grade Level:** 9, 10, 11, or 12 (36 weeks)

**Technology Foundations DTE8402**

**Grade Level:** 9, 10, 11, or 12 (18 weeks)

In the beginning high school course in the Design and Technology program, students acquire a foundation in technological material, energy, and information and apply processes associated with the technological thinker. Challenged by laboratory activities, students create new ideas and innovations, build systems, and analyze technological products to learn further how and why technology works. They work in groups to build and control systems with engineering in the development of a technology.

<p><b>Technology Transfer DTE8405</b>  <b>Grade Level:</b> 10, 11, or 12 (36 weeks)  <b>Technology Transfer DTE8404</b>  <b>Grade Level:</b> 10, 11, or 12 (18 weeks)  <b>Prerequisite:</b> Technology Foundations</p> <p>Students work with a variety of computers, materials, and systems to improve their skills and knowledge. Groups work together, applying math, science, and communication concepts, on a project that combines systems such as production, energy, communication, transportation, biotechnology, and other technologies. Thematic activities engage students in community problems where they transfer the technological method to address recycling, space exploration, and housing.</p>
<p><b>Telecommunications I TDI8650</b>  <b>Grade Level:</b> 10 or 11  <b>Telecommunications II TDI8651</b>  <b>Grade Level:</b> 11 or 12</p> <p>Description is under development. Course information is available from Trade and Industrial Education, Virginia Department of Education.</p>
<p><b>Television Production I TDI8688</b>  <b>Grade Level:</b> 10 or 11  <b>Television Production II TDI8689</b>  <b>Grade Level:</b> 11 or 12  <b>Prerequisite:</b> Television Production I  <b>Television Production III TDI8690</b>  <b>Grade Level:</b> 12  <b>Prerequisite:</b> Television Production II</p> <p>Students learn to operate equipment such as TV cameras, video tape recorders, microphones, audio mixers, and audio/video editing systems. They practice skills related to production, direction, and scripting of programs and set design and construction. Students also study control room procedures and responsibilities.</p>
<p><b>Trade and Industrial Education Dual Enrollment with Postsecondary TDI8801</b>  Information is available from the Trade and Industrial Education Service, Virginia Department of Education.</p>
<p><b>Travel and Tourism Marketing MKT8165 (co-op)</b>  <b>Travel and Tourism Marketing MKT8166 (oe)</b>  <b>Grade Level:</b> 11 or 12 (36 weeks)</p> <p>Students develop skills in the areas of communication, human relations, mathematics, creative selling, sales promotion, industry technology, and market research. They learn computerized systems used by major airlines and travel agencies. In addition, students obtain a thorough understanding of the travel and tourism industry and the career options available. Academic skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting this course are studied.</p>
<p><b>Turf Establishment and Maintenance ANR8051</b>  <b>Grade Level:</b> 11 (suggested) (36 weeks)</p> <p>Students begin to master the duties and tasks of professionals who establish and maintain turf in public areas such as golf courses; parks; athletic fields; school, industrial, and institutional campuses; and residential lawns.</p>



**Utility/Heavy Construction Technology I TDI8616****Grade Level:** 10 or 11**Utility/Heavy Construction Technology II TDI8617****Grade Level:** 11 or 12**Prerequisite:** Utility/Heavy Construction Technology I**Utility/Heavy Construction Technology III TDI8618****Grade Level:** 12**Prerequisite:** Utility/Heavy Construction Technology II

This program provides both the knowledge and the hands-on skills needed to secure a job as a construction equipment operator. Students learn about site grading and development, excavation, concrete structures, pipe laying, road building, and other topics. They have the opportunity to gain experience in operating excavators, bulldozers, loaders, and motor graders. Completion of this sequence may prepare students for the certification exam for medium/heavy truck technician or parts specialist.

**Veterinary Assistant Level I HMS8310****Grade Levels:** 10-12 (36 weeks, double or triple period)**Prerequisites:** None—Introduction to Health and Medical Sciences is strongly recommended.

Students learn animal science and the care of animals, including animal structure and function, principles of health, and microbes and disease. They develop basic skills and techniques of assisting the veterinarian in the following areas: receptionist duties; animal examinations; examining room and laboratory work; the handling, caring, and feeding of animals; first aid and surgery; and maintenance of equipment and facilities. On-the-job clinical instruction may occur in veterinary offices or animal clinics and is coordinated by the health and medical sciences teacher.

**Veterinary Assistant Level II HMS8311****Grade Levels:** 11-12 (36 weeks, double or triple period)**Prerequisites:** Veterinary Assistant (Level I)

The student may incorporate a cooperative work experience that combines classroom instruction with two or three hours of school-released time for on-the-job training in a health care facility such as a veterinarian's office or clinic.

**Veterinary Assistant Level III HMS8312****Grade Level:** 12 (36 weeks, double or triple period)**Prerequisites:** Veterinary Assistant Level I and Level II

The student will incorporate advanced classroom instruction with two or three hours of release time for on-the-job experience.

**Welding I TDI8672****Grade Level:** 10 or 11**Welding II TDI8673****Grade Level:** 11 or 12**Prerequisite:** Welding I**Welding III TDI8674****Grade Level:** 12**Prerequisite:** Welding II

Students learn to use gases and/or welding processes and to braze and solder metal parts according to diagrams, blueprints, or written specifications.

**Word Processing BUS6625****Grade Levels** 9, 10, 11, 12 (36 weeks)**Word Processing BUS6626****Grade Levels:** 9, 10, 11, 12 (18 weeks)**Prerequisite:** Keyboarding\*

Students develop intermediate to advanced level word processing skills using a variety of software functions, including graphics, desktop publishing, and telecommunications. Students gain competence integrating other applications such as database and spreadsheet into word processing activities. Classroom experiences also provide for skill development in communication.

\*Keyboarding course(s) or teacher approved demonstrated and documented touch keyboarding skills

**Work and Family Management FCS8205/FCS8282****Grade Levels:** 10-12 (18/36 weeks, single period)

The work and family management course focuses on balancing the multiple demands of career, family, and personal life; the interpersonal skills needed to build strong relationships in the family and the workplace; and conflict management, problem solving, goal setting, stress management, and resource management in work and family.

Honors credit is available as a local option. Teachers will incorporate the skills of math, science, written and verbal communication, and computer applications when appropriate in the content.